Two Sections—Section One

Railway Age

WITH WHICH IS INCORPORATED THE RAILWAY REVIEW

FIRST HALF OF 1927—No. 9 NEW YORK—FEBRUARY 26, 1927—CHICAGO SEVENTY-SECOND YEAR

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Volume 82 **Number 9**

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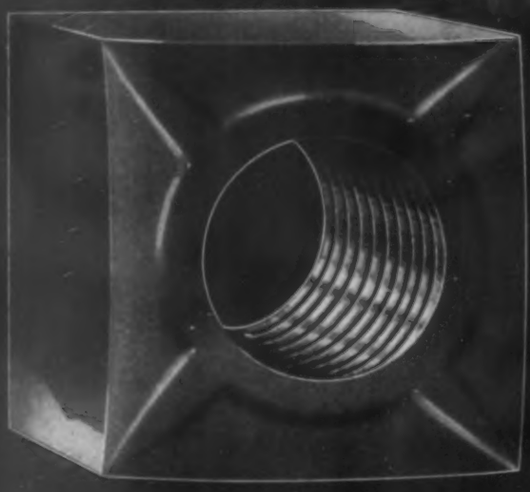

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Railway Age

Vol. 82, No. 9 February 26, 1927

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Air Transport Progress Here and Abroad

AIR transportation has been increasing and extending rapidly in this country, but so little has been said about it, as compared to publicity given to such matters abroad, that few people recognize how rapid this progress has been. It promises to have some effect upon the railroads. For instance, more and more mail is being carried by airplanes and the American Railway Express Company has made a contract to become effective shortly, for carrying preferential shipments between New York, Chicago and the southwest. Will the railroads be adversely affected by the loss of this business, or will the more rapid transport of the mail and certain types of express stimulate business generally and in the end increase the amount of goods to be carried by the railroads? What steps, if any, should railroad officers take to co-operate in this development or to co-ordinate rail and air transport? Questions such as these are suggested in the article in this issue by F. Desmond Sprague, which tells of the progress which is being being made in air transportation in this country and of favorable factors which are fostering this growth.

Flat Yard Converted to an Efficient Hump Layout with Retarders

FOLLOWING the invention and development of car retarders on the Indiana Harbor Belt the first commercially manufactured installation of car retarders in the United States was placed in service on the Illinois Central at East St. Louis on February 8, 1926. Car retarder installations at other yards on roads near Chicago have since been completed and been in service from six to eleven months. Likewise the New York, New Haven & Hartford installation at Hartford, Conn., has been in service about three months, while the Norfolk & Western is equipping a yard at Portsmouth, Ohio, with car retarders. This is a good start for the year. The idea of using car retarders has not been given consideration on certain roads because of the belief that they are too expensive for any but very extensive hump yard layouts. As a matter of fact, the use of retarders should not only increase the capacity of almost any hump yard, but should also reduce the cost of operation. It is possible, therefore, that it may be economical to convert some flat switching yards to hump yards and to equip them with retarders, and thereby reduce the cost of operation enough by the elimination of switchmen and car riders to pay returns on the investment and also increase the capacity of the layout. This situation at the Blue Island yard of the Indiana Harbor Belt was so handled, as described elsewhere in this issue. Operating, engineering and signal officers attending the engineering conventions in Chicago during March can well afford to spend an extra day inspecting the retarder installations on the Illinois Central and the Indiana Harbor Belt in the vicinity of Chicago.

Co-operation in the Cab

IT has long been recognized that the best results in fuel economy and general locomotive performance can be obtained only when both the fireman and the engineman work together. In other words, there must be complete co-operation between both sides of the cab. If the fireman fails to provide maximum steam pressure at the right time, or the engineman operates the locomotive without regard to fire conditions, either alternative is about equally unfortunate and costly from the point of view of the railroad. An example of what can be accomplished by an experienced engineman and fireman working together is afforded by the performance of an engine crew on the Missouri-Kansas-Texas which in the month of January handled freight trains a total of 3,457 miles without once permitting the safety valve to pop. The total tonnage hauled was 90,557 and the fuel oil consumption, 55,361 gallons. The total delays amounted to 86 hours and the number of stops, 219. This record is particularly creditable because of generally unfavorable weather conditions, slippery rails, etc., and because part of the run of this crew is in heavy through-freight service with a 3,000-ton train and the balance in local work and switching, involving numerous stops. If this performance is typical of that of other engine crews on the Katy, it goes far to explain why this road was able to make a 31 per cent reduction in unit fuel consumption from 157 lb. per 1,000 gross ton-miles in 1922 to 107 lb. in 1925, as shown by Interstate Commerce Commission reports.

Adverse Decision Effect Temporary

THE inherent value of railroad stocks and appreciation of the position recently attained by them in the minds of buyers and sellers in the stock market was evidenced in an interesting manner following the announcement of the Supreme Court's decision in the Los Angeles & Salt Lake case. The decision was adverse and when it was reported on the stock market news tickers, there promptly followed an hysterical decline in the prices of most of the railway issues. However, when it was realized in what particular manner the decision was adverse there was equally prompt recovery, indicating that present high prices of railway stocks result not from mere speculative optimism concerning the future of the industry. The Supreme Court, it is true, did reverse the decision of the circuit court, but merely on the familiar ground of the tentative valuation cases; namely, that a

valuation placed on a railroad by the commission cannot be asserted in the courts, nor can the Supreme Court set aside such a valuation until the Interstate Commerce Commission has used it as grounds for some official act. This is what was said of tentative valuations; it is now also made to apply to final value. This means that the issue has been postponed again, which while not helpful to the railroads is certainly not a defeat for them. The question of present value was not an issue in the case. The stock market apparently decided, as it learned more about the decision, that first news was worst news and that there was in the decision little to warrant concern at this time. One dislikes to think what might have happened in the market if the rail shares had been less popular than they are at present or if speculative factors alone had brought them to their present high prices in the market.

Increasing Use of Electric Power

RECENTLY compiled figures show some surprising facts concerning the use of electrical equipment on the railroads. There is a widely accepted belief that railroads have lagged behind industrial plants in taking advantage of savings offered by applications of electric power. An article published recently in the Baltimore & Ohio Magazine shows that during the past five years the Baltimore & Ohio has doubled its use of electric power. Information gathered by the Railway Electrical Engineer shows that the Chicago, Burlington & Quincy has increased the use of electricity sixfold in twelve years. These are greater than average increases in the industrial field during the same periods. The two developments are probably exceptional but they indicate that some roads are rapidly overtaking their leaders in the industrial field.

Selecting Railway Officers for the Future

IT is becoming more and more generally recognized that something must be done to insure the proper selection and preliminary training of those who will be called upon to act in supervisory positions in all departments of the railways. For one thing, men now holding supervisory positions are recognizing the need of a better understanding of the principles underlying successful leadership and are taking various steps to perfect themselves in this respect. The railroad managements, as well as the industries, in recent years have also become impressed with the importance of the so-called human element factor, and this has automatically emphasized the importance of a higher type of training and leadership ability on the part of those who are placed in charge of groups of workers. W. J. Cunningham, James J. Hill, Professor of Transportation of the Harvard School of Business Administration, who came up through the ranks and has had long and extended experience in railroad service, has given much thought and study to this question. In an address before the New York Railroad Club last week, an abstract of which will be found elsewhere in this issue, he outlined what he designated as a cadet system, whereby promising young men in the railroad organization and college graduates could receive an intensive course of training which would fit them for holding supervisory positions in various departments. Professor Cunningham did not claim that the idea was new or original with him; the discussion developed the fact that somewhat similar methods on a small scale and less completely organized, were being followed on a few roads. Professor Cunningham and the Railroad Club are to be congratulated upon starting a discussion of a concrete plan of this kind. It may not be perfect or entirely practicable in all of its details, but a real service will be rendered if by directing thinking to this question in a concrete way, different railroad may be encouraged or inspired to take some action looking toward the more careful selection and thorough preparation of men for supervisory positions. On two things, at least, there seems to be a common agreement; first, that special pains must be taken to select men who seem to have possibilities as leaders; second, that the future leaders must be trained to *think*, whether it be by special training on the job, by a college training, or by co-operative courses such as are now being given by the Central of Georgia and the Georgia School of Technology.

Who Should Pay for Improvements to Unremunerative Suburban Service?

THE North Jersey Transit Commission, directed by the state legislature to make studies and recommendations for improving passenger transportation in the area, has issued another excellent report, reviewed in abstract elsewhere in this issue. We say "another" because we had occasion (*Railway Age*, February 13, 1926, page 413) to comment favorably on a previous report of this body. And our characterization "excellent" is based, among other things, on the recognition, manifest in previous reports and continued and expanded in the one now at hand, of the public's responsibility for improvements of this character in suburban territory. The detailed plans of the commission need not concern us here. They are interesting to the railroads involved, but to railroad men generally the principle which the commission uses as a guide is even more important. This is, briefly, that extensive improvements in transportation in a suburban area such as those planned are primarily a concern of the communities rather than of the railroads. The first specific improvement being considered by the commission is a terminal electric rapid transit line to connect steam railroads with the heart of the city and shorten the transit time of the passenger from his suburban home to metropolitan place of business. The commission does not ask the railroads to provide this service, but recognizes the responsibility of the public to provide it. Furthermore, estimating that fares on the electric line would have to be upwards of 11 cents to make the line self-supporting, the commission proposes to resort to taxation and assessment. Improvement of this character, in the words of P. H. Cornick, a specialist for the commission, "creates sources of revenue other than fares alone. . . . . These potential sources in the form of general increases in ratables, or in localized benefits, should be drawn on for all or part of the construction costs." This principle is important to every railroad which operates unremunerative suburban service, and is at the same time importuned for expensive additions and betterments. Although the report does not say so, it would seem that if the principle is acceptable in this specific instance, it ought to apply with equal force to other betterments for suburban service which do not yield a direct revenue to the railroad commensurate with their cost.

Reduction in Accidents Involving Trespassers

IT is remarkable how much more agitation is caused by accidents due to some causes than to others, and how the public will become aroused by an increase of one kind and ignore a decline of a related kind.

There is much agitation at present for the elimination of highway grade crossings, and it is usually demanded that the railways shall do the work almost regardless of its cost. There has been an increase in the number of fatal accidents at grade crossings, and it has been due to increased use of motor vehicles. Meantime, there has been a much larger reduction of fatal accidents that has been due to the same cause, but about which almost nothing is said.

The number of fatalities on the railways reached its maximum just twenty years ago—in the year ended June 30, 1907. In that year there were 5,612 trespassers killed—some of them at highway crossings. In the same year the number of non-trespassers killed at highway crossings was 697. These figures total 6,309. The word "trespasser" has an odious sound, but all it means is any person who goes upon railway property without having any employment to perform or business to do there. He may go there to steal a ride, or to steal property, or merely to walk on the track.

About ten years later, in the year ended December 31, 1917, the number of trespassers killed had declined to 4,243, while the number of non-trespassers killed at highway crossings had increased to 1,838, these two figures totaling 6,081.

In 1925 the number of trespassers killed had further declined to 2,584, while the number of non-trespassers killed at highway crossings was 2,086, a total of 4,670 persons. From 1907 to 1917 the decline in the number of trespassers killed was almost equalled by the increase in the number killed at highway crossings, but in the eight years ending with 1925 the decrease in the number of trespassers killed was so great that the decline in fatalities of the two classes combined was 23 per cent.

There was a large increase in railway traffic and service in 1926, and this has usually resulted in a temporary increase in accidents. In the first ten months of 1926 the number of non-trespassers killed at highway crossings was 1,910, as compared with 1,692 in 1925, while the number of trespassers killed again declined, being 2,227 as compared with 2,236 in the corresponding period of the preceding year.

If each day there should be a collision, or an automobile struck at a crossing, resulting in the deaths of seven persons, widespread attention would be attracted; but the reduction of about one-half that has occurred within the last decade in the number of trespassers killed on railways, resulting in the saving of an average of about seven lives daily, has attracted almost no attention.

The explanation of the reduction in the number of trespassers killed is easy, although apparently nobody has ever publicly made it. There are fewer trespassers than formerly. Owing to the great increase in the mileage of good highways, many of those who formerly walked on tracks or rode the bumpers to get from one place to another now walk on paved highways or get gratuitous rides in automobiles; and in consequence the increase in the mileage of good highways and in the number of motor vehicles actually have not increased, but largely reduced, the number of fatalities attributed to railway operation by reducing the number of persons killed while trespassing on railway property much more than they have increased the number killed while crossing tracks on highways.

It should not be assumed that the entire reduction in railway accidents has been due to these causes. The total number of persons killed on railways in 1907 was 11,839, of which 5,530 were not trespassing or crossing tracks. The total number killed in 1917 was 10,087, of which 4,006 were not trespassing or crossing railway tracks.

The total number killed in 1925 was 6,766, of which only 2,096 were neither trespassing nor crossing railway tracks. The reduction since 1917 in the number of persons killed that were neither trespassing nor crossing railway tracks has been about 50 per cent—a record that probably has not been surpassed in any other field, and which should not be overlooked when it is claimed that the railways should be forced to spend hundreds of millions of dollars to eliminate grade crossings, or to shorten their freight trains, or to do under compulsion various other things to reduce accidents.

Railway Wages and "Finance"

IN a recent editorial the *Railway Age* mentioned the occasional assignment of railroad employees' pay checks at large discounts, with consequent loss to the employees, and asked if the solution of the problem of enabling employees to get advances when they need them is not to be found in "an extension of mutual thrift and loan societies among the employees, aided by the friendly co-operation of their employers." The official bulletin of the Associated Organizations of Shop Craft employees of the Northern Pacific replied asking, "would it not be more reasonable to assume that the workers are not receiving sufficient wages?" saying that "the sympathies of the *Railway Age* are all on the side of finance," and suggesting that this paper forget about employee loan societies "and instead devote some space to the general proposition of an adequate wage for all employees in industry."

Such statements illustrate the desirability of presenting to employees the facts regarding the economic and other conditions and influences that determine the wages they are and can be paid. The facts regarding the railways as a whole can be used as well as any to illustrate these conditions and influences. Complete statistics for 1926 not being yet available, we shall use those for 1925.

The gross earnings received by the railways averaged $3,505 for each man employed in 1925. The average wage paid per employee was $1,637.25. Improvements in the properties were made which, under accounting rules, were charged to "capital account." Employees worked in making these improvements and an average of $123.09 of the average wage per employee was charged to them. The remaining $1,514.16 of the average wage was charged to operating expenses. This was 43.2 per cent of the average total earnings made by the railways per man employed by them. Why did not employees get more of the total earnings?

The rest of the gross earnings made per man employed were disposed of as follows: For fuel, $235, or 6.7 per cent of them; for materials and supplies, $662, or 18.9 per cent; for loss and damage to freight, injuries to persons and insurance $60, or 1.7 per cent; for depreciation and retirements of property, $126, or 3.6 per cent; for taxes, $207, or 5.9 per cent; for rentals of equipment and joint facilities, $60, or 1.7 per cent. This left of the total earnings per employee $641 net operating income with which to pay interest and dividends on

capital already invested or to invest directly in improvements.

It is obvious that in order to have paid a higher average wage per employee the railways would have had to do one or the other of two things—either made more total earnings per employee, or paid out less of their total earnings for things other than labor. Their total earnings were derived from freight, passenger and other rates fixed by the Interstate Commerce Commission and by state authorities. The managements of the railways have tried to prevent reductions in these rates and even to secure advances in them. In these efforts they have received little or no assistance from employees or labor leaders. On the contrary, many labor leaders have helped in one movement after another for reductions of railway rates and earnings.

Other Things as Essential as Labor

Now, let us consider the things other than labor for which railway earnings were paid. A railway cannot be run without fuel for its locomotives, or without materials and supplies with which to repair and maintain its locomotives, cars, tracks, buildings, stations, etc. Railway managements are buying these things at lower prices than a few years ago, and constantly striving to increase the efficiency and economy with which they are used. Some loss and damage to freight, injuries to persons and insurance are unavoidable, but their total cost is being constantly reduced, and was less in 1925 than in any year since 1917. Every kind of railway property wears out, and a large expense for depreciation and retirements is, therefore, unavoidable. Taxes are fixed by government authorities, and the amounts levied by them must be paid. A railway that uses equipment or facilities belonging to others must pay for their use.

In other words taxes and every kind of operating expense defrayed from earnings are just as necessary and unavoidable as the employment of labor. Where, then, was the money with which to pay a higher average wage in 1925 to be obtained?

The plain implication of the reference to "finance" in the article from which we have quoted was that it should have been obtained from the net operating income earned. This net operating income, as already shown, averaged $641 for each man employed. Now the property of the railroads—tracks, terminals, locomotives, cars, etc.,—represented an investment of $13,228 for each man employed by them. Therefore, the net operating income earned by them per employee represented a return of only 4.85 per cent on this investment per employee. Obviously, if a return were not paid on the capital already invested in the railroad business, no more would be invested in it. This would stop all improvements in tracks, enlargements of terminals and increases in the capacity or number of locomotives and cars, and soon the railways would be unable to handle any more traffic. But traffic, especially freight, is growing, and it is vitally necessary to the welfare of the nation that the railways shall become able to handle more of it. Therefore, an advance in wages that prevented the railways from earning an adequate return on capital would be destructive of the welfare of the nation.

Are Capital's Earnings Sufficient?

Is an average return, year by year, of less than 5 per cent enough to cause a sufficient amount of capital to be invested in the railroad business? Every intelligent railway employee ought to know it is not. Many of them have bought homes with borrowed money and given mortgages on them. They know they are paying interest rates on these mortgages in excess of 5 per cent. Why should they think railways can get money for a great deal less? These facts show that the question of what wages the railways can pay is an economic one and that those who exaggerate railway profits and rave about "finance" may create prejudice and hostility among employees, but contribute nothing whatever toward settling the question of what wages ought to be, or how they can be increased. Hard as it may seem, there is no relationship between the wages men want, or even need, and the wages they can be paid.

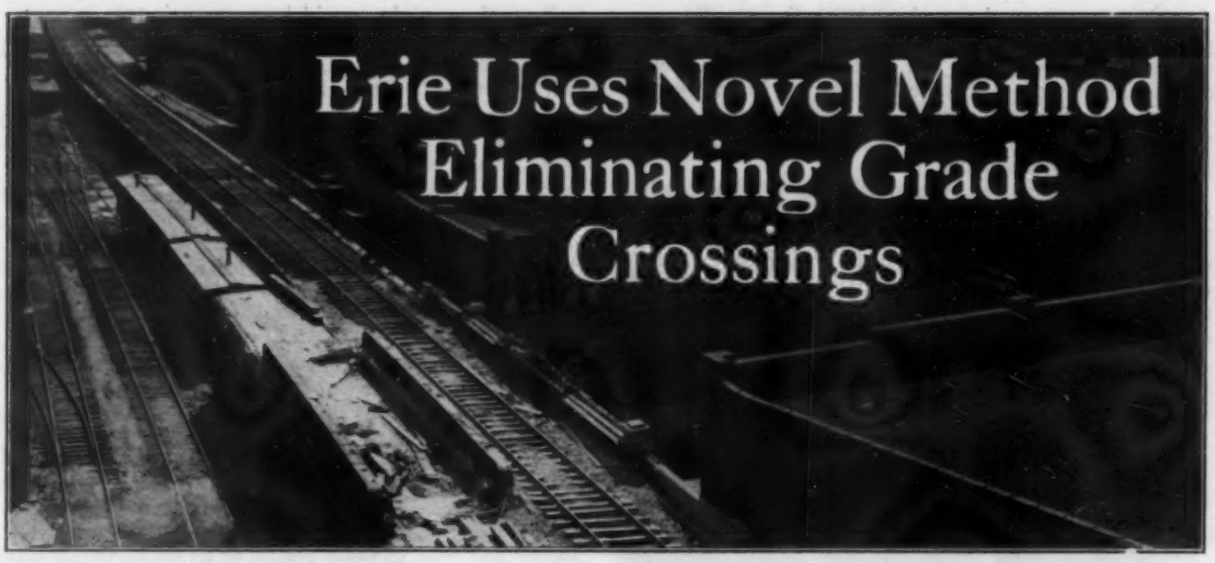
Wages Have Been Advanced

But railway wages have been advanced, and are higher now in proportion to the cost of living and the passenger and freight rates being charged by the railways than ever before in history. They are still advancing. How have advances in wages so much greater in proportion than the advances that have occurred in railways' rates been made possible? They have been made possible by ***increased efficiency of railway operation.*** This increase in efficiency of operation has been partly due to better work by officers and employees, but very much more largely to the investment of capital in the railroad industry. The investment of capital has reduced grades, enlarged yards, improved shops, provided larger and stronger cars, and better and more powerful locomotives. These things have reduced the number of tons of fuel and materials, and the number of hours of labor of employees, required to handle a given amount of traffic; and this made it possible, within the last ten years, to advance the average hourly wage per employee about 125 per cent, although the average passenger and freight rate has increased only about 50 per cent.

What Attacking "Finance" Does

Now, when those who speak for railway employees advocate lower passenger or freight rates what do they actually do? They advocate reductions of railway earnings, and thereby make it more difficult to pay higher wages. When they oppose methods of increasing efficiency, such as lengthening of freight trains, what do they do? They in effect oppose reductions in the number of hours of labor and in the number of tons of fuel and materials required to render a given amount of transportation service, and thereby make it more difficult to advance railway wages. When they spout about "Wall Street finance" and advocate reduction of the net return of the railways below any reasonable amount, what do they do? They in effect oppose the investment of capital in the railroad industry, and the making of improvements necessary to enable the railways to handle a greater total traffic and more of it per man employed and per ton of fuel and materials used. In doing this they, in effect, oppose both the employment of the labor necessary to make the improvements, and those economies in operation that are necessary to enable the railways to pay higher wages per man without charging higher rates.

The worst enemy of both railway employees and railway patrons is the demagogue or ignoramus that tries to so restrict the net return earned by the railways that investment in them will be unattractive to capital. Unfortunately, many classes of railway employees and railway patrons readily accept as their leaders ignoramuses or demagogues who talk economic moonshine to them about what they ought to get and about "finance" keeping them from getting it.



Erie Uses Novel Method Eliminating Grade Crossings

The Work was Done in Cramped Quarters

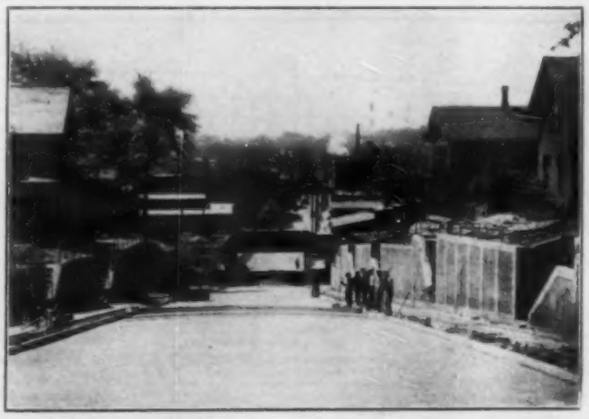
Concrete trestle as a retaining wall permitted full utilization of cramped right of way and enabled work to be carried out without obstruction

OVERCOMING the difficulties presented by a cramped right of way, adverse street gradients and heavy highway and railroad traffic, the Erie has recently completed a grade crossing elimination project at Jamestown, N. Y., in which three important street crossings were eliminated by depressing the streets and raising the main line tracks through the center of the city over a distance of approximately a mile. The Erie's main line through Jamestown is situated along the lower slope of a deep valley and crosses at right angles several of the main streets of the city which descend on steep gradients to the tracks. The hazard to street traffic had become so acute in recent years, particularly during the winter when ice covered the pavements, that approach to the crossings was dangerous and almost impossible under complete control. In spite of precautions taken and the maintenance of crossing gates and watchmen at the main crossings, the hazard existed and accidents occurred from time to time.

Work Begun in 1913

As far back as 1913 the urgent need for eliminating the main crossings at Jamestown became apparent and in that year work was begun on a project which contemplated the elimination of the grade crossings at West Second street, Main street and Institute street, by raising the tracks and depressing the streets. With a complete program of procedure outlined, work was begun on the construction of retaining walls which, together with other types of bank-retaining structures, had to be carried throughout practically the entire length of the track elevation owing to the narrowness of the right of way through the city, the close proximity of office and industrial buildings to the tracks and the passing of the Chadakoin river parallel with and immediately south of the tracks for a considerable distance west of the Main street crossing. Another governing feature, necessitating some sort of structure to retain the embankment of the main tracks, was the existence of an important industry track along the south side of the right of way, stubbed at Main street and connecting with the main line just east of Institute street. As the location and elevation of this track had been established to serve industries abutting the railroad property and as this track was used daily, it was evident that it had to be kept in constant service and could not be altered in the general track elevation work.

Beginning work on the west end of the project where



High Retaining Walls Were Necessary on Both Sides of the Street North of the Foote Avenue Bridge

there was ample right of way, a solid gravity-type retaining wall was constructed along the south limits of the railroad property west of Main street, to retain the high embankment necessitated by the track elevation along the course of the Chadakoin river and in order to make possible the full use of the right of way at this point for a small yard. At this time certain sections of retaining walls were also completed along the north side of the right of way east of Main street, where it was necessary to keep the fill on the railroad property and away from industrial buildings which in many cases were only a

short distance from the tracks. With these walls completed, aggregating a total length of about 2,000 ft. and averaging between 25 ft. and 30 ft. in height, and with the elimination of the grade crossing at West Second street by depressing the street and constructing a seven-track solid deck through plate girder bridge, work on the project was suspended during the war.

Beginning again in August, 1923, work was started on the completion of the project. With progress well under way, a change in the plans for the work at the east end was made by the city, which proved to the advantage of both the city and the railroad. This change involved the elimination of the grade crossing at Foote avenue and the permanent closing of the crossings at Institute street and Center street, these streets, however, to be provided with subways for pedestrians. While this meant an extension of the track elevation work some distance further east, the advantages of the plan were readily apparent to the railroad as it provided for the closing of two streets which undoubtedly would have to be separated in a future extension of the work if the first plan had been followed.

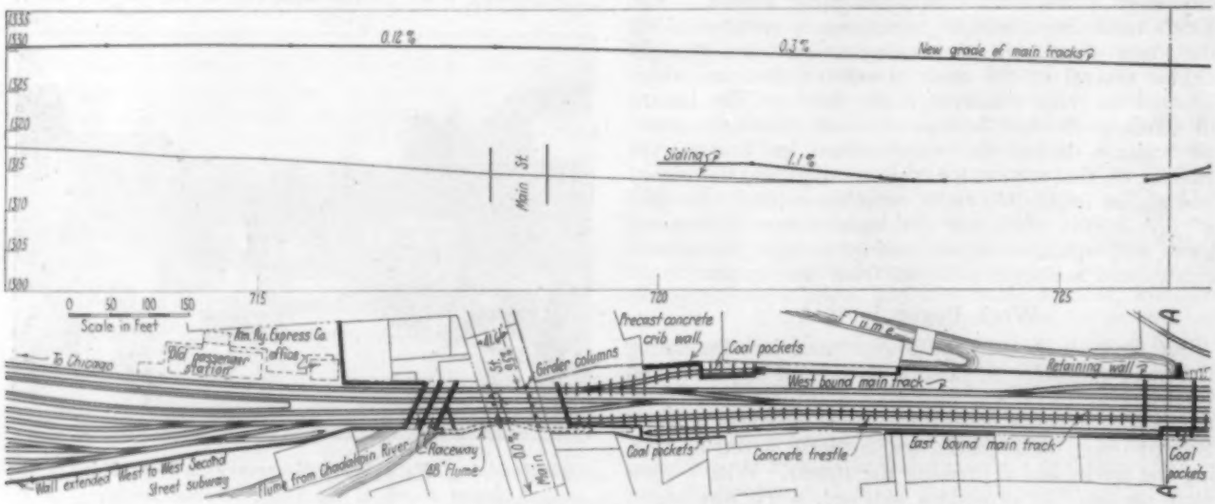
Proceeding on this basis, an effective piece of grade crossing elimination work has been carried out, providing three through thoroughfares and two pedestrian subways under the tracks, and permanently closing two streets which formerly crossed the tracks with much hazard to traffic. With this work completed there are now only two grade crossings of the Erie's main line tracks in the City of Jamestown, Buffalo street and Fairmont avenue, both of which can be eliminated at some time in the future without altering the present work.

Concrete Trestle With Aprons Serves as Retaining Wall

With the tracks to be raised a maximum of 16 ft. in the vicinity of Main street through a right of way 75 ft. service and at grade, would have necessitated the complete shoring up of the track while the wall was under construction; and second, because to have raised one track at a time between the retaining walls on opposite sides of the narrow right of way to allow traffic to proceed over the new bridge to be constructed at Main street, would have required a fill so wide at the base that it would have cut off traffic on practically all of the right of way. The only alternative to this, if retaining walls were constructed was to construct a substantial temporary trestle east of Main street to carry one line of main traffic while the remaining area between the retaining walls was being filled. This would have been both difficult and expensive. Confronted with this problem, a solution was found in the construction of a reinforced concrete trestle where the fill was the highest, which served as a construction trestle and as a means of keeping one of the two tracks in main line service during the track elevation work, and after the completion of the work, as a permanent roadbed and retaining wall.

The plan followed was to move the main line tracks east of Main street, close to the north side of the right of way, and then to build a solid concrete retaining wall along the south edge of the right of way from a point where such construction became necessary at the east end of the track elevation, westward for a distance of about 350 ft. to a maximum height of 11 ft. 6 in. From this point westward, where a solid gravity type wall and an earth fill would have cramped the right of way during construction and interfered with train operation, a reinforced concrete trestle was constructed for a distance of about 1,100 ft. to the east abutment of the Main street bridge. The continuity of this trestle is interrupted only by a 60-ft. plate girder bridge carrying the tracks over a 15-ft. concrete arch located about 400 ft. west of Institute street.

The concrete trestle was constructed on 76 rectangular



Map and Profile of the West End of the Track Elevation District

wide, which could not be extended because of existing structures, and with the necessity of keeping the main line open and permitting street traffic to cross the tracks at all times, the plan of building solid retaining walls along both sides of the right of way and then raising the tracks under traffic was impractical; first, because to have constructed a gravity-type retaining wall along the south side of the right of way between the main tracks and the industrial track which had to be kept in piers, 15 ft. wide and 2 ft. thick, spaced for the most part 14 ft. center to center. These piers are of uniform section and were cast in place by digging out the foundation area, placing steel forms and rod reinforcement, and then pouring the concrete direct from a mixer installed on a standard gage railroad car. This car was operated on a construction track laid just south of the eastbound main, and was moved from pier to pier by a locomotive crane which was used also to place and remove the steel

forms and to transfer the concrete materials to a hopper placed above the mixer on the car.

The reinforced concrete slabs of the trestle were precast in the yard space west of Main street and were equipped with four U-rods embedded in the concrete in order to provide easy handling by a locomotive crane. As work on the trestle progressed, these slabs were moved to the site and set in place by the crane. All of the slabs are 23½ in. thick and in order to facilitate handling were constructed in widths of 6½ ft. and 8½ ft. to make up the full 15-ft. width of the trestle. When the trestle was completed, the piers below the ground level and the tops of the deck slabs were waterproofed by a heavy coating of pitch, and the joints between slabs were calked tight with an oakum and pitch filler.

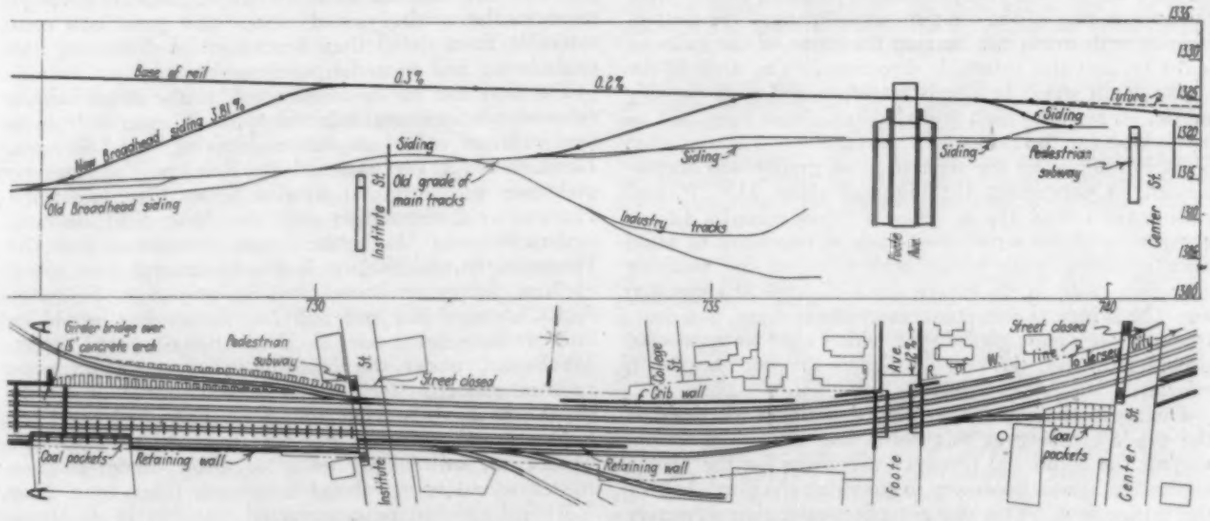
While this work was going on, the south half of the girder bridge at Main street was being constructed and the southerly tracks west of Main street were being raised by a series of lifts to the bridge deck level. When this work was completed, the construction track lying between the trestle and the eastbound main was taken up and laid on the trestle and across the Main street bridge. This track was then ballasted with stone, cut into the existing tracks at each end, and put into service. During all of this work no interference was afforded traffic on either the eastbound or westbound mains, which were not obstructed at any time.

With the completion of the track on the trestle, the eastbound main was taken out of service and the filling of the space previously occupied by the construction track and the eastbound main was then readily accomplished by running trains of air dump cars out on the trestle and dumping direct to make the new fill. As the fill increased, the south slope was permitted to extend under the trestle and was retained at the outside edge by means of light precast reinforced concrete curtain walls which were placed between adjacent piers. These walls are about 6 in. thick and varying with the height of the fill, range from 3 ft. 9 in. to 7 ft. high. With the fill completed for another track adjacent to the trestle, track was laid, connected up with the raised tracks west of Main street and the existing tracks west of Foote avenue, and then put in service. With two tracks then in service at the new elevation, the westbound main was taken out of service and removed.

Without interference to traffic the north half of the Main street bridge was then constructed, as were also such additional retaining walls and industrial facilities as were necessary along the north right of way line. All of the fill retainers on this side of the right of way are gravity type retaining walls with the exception of a short stretch of concrete trestle and precast concrete crib-

Constructing the Trestle Piers Without Interfering with Operation on the Mains or the Busy Industry Track

bing wall, constructed just east of Main street in connection with a short industrial coal pocket track. Upon the completion of these structures and the Main street bridge, the embankment was extended across the right of way for two additional tracks by dumping from the inner raised track and then the next track put in service at the new elevation. All of this grading was accomplished by work train and 12-yd. air dump cars. The total quantity of material used in the fill amounted to approximately 100,000 cu. yd., all of which was secured at a borrow pit about 1¾ miles west of the work.



Map and Profile of the East End of the Track Elevation District

The completed elevation of the tracks required a maximum fill of about 16 ft. which imposes about 1,200 ft. of 0.83 per cent grade and 2,100 ft. of 0.2 per cent and 0.3 per cent grade on the east half of the work. West of

Main street, however, the new track elevation provides a long descending grade of 0.11 per cent, overcoming at this end an original ascending grade about as severe as that encountered in the new grade at the east end.

Bridges Give Little Trouble

The complete separation of grades at Jamestown involved the construction of only four bridges, one of which, that at West Second street, was completed during the work previous to 1917. The other three bridges include those at Main street and Foote avenue, and a 60-ft. four-track deck plate girder bridge which it was found advisable to construct over an existing 15-ft. concrete arch which crosses under the track about 400 ft. west of Institute street. At Main street, the tracks were raised 16 ft. and the street depressed 21 in. Here the bridge is a four-track solid floor through plate girder structure supported on columns at the curb lines. As stated previously, the south half of this bridge, including the abutments, was constructed first to permit raising of the tracks on the south side of the right of way and at the same time preclude interference from traffic on the north side. When this half of the bridge was completed and traffic diverted from the north side of the right of way, the other half was built and connected to the first half by means of construction joints. In addition to the girder sections spanning Main street there are two 20-ft. reinforced concrete spans on the east end of the bridge, and three 20-ft. and two 19-ft. spans of the same type on the west end. While the two 19-ft. spans bridge a raceway crossing under the tracks, it is of interest to note that the 20-ft. spans on each end were put in to bridge the sidewalks and also to provide store space along the relatively valuable frontage on Main street.

In order to enhance the appearance of the bridge, all of the steel columns and the two outside girders are encased in concrete, the former having a bush-hammered finished set off by a rubbed finished paneling effect, while the outside face of the concrete encasement of the girders is inset with green tile bearing the name of the railroad and city, and also timetable directions. The deck of the entire Main street bridge is waterproofed with two-ply fabric, on top of which asphalt blocks have been laid as a sub-base for the ballast.

At Foote avenue the separation of grades was accomplished by depressing the highway about 11½ ft. and raising the tracks 4½ ft. To do this involved a 12 per cent grade in the street, and made it necessary to build high retaining walls along both sides of the abutting property, north of the bridge, for a distance of about 400 ft. The bridge at this point, as at Main street, is a four-track through plate girder span with a solid waterproofed deck. However, the outside girders are not encased in concrete.

Owing to the somewhat delayed decision to eliminate the grade crossing at this point, and difficulties in obtaining the additional property necessary for the bridge abutments, it was necessary to construct the north half of the bridge first. This did not affect operation adversely in any way, however, as work on this bridge was not started until trains were operating over the trestle on the south side of the right of way. When the north half of the bridge was completed, the track from the trestle and the first track raised on the embankment were swung northward over it and the south half was then constructed without interference.

The abutments of this bridge, which are of the hollow box, reinforced concrete type, support the girders at the curb line and provide ample space beneath for sidewalks. The only difficulty encountered in any of the bridge work occurred at this point where, on account of a soft, spongy foundation, it was necessary to drive piling under the greater part of the abutments.

The pedestrian subways at Institute and Center streets were constructed under the tracks along the west property line of the street in each case, and built one half at a time so as not to necessitate shoring and working under traffic. The subways are 8 ft. wide and are constructed of concrete. At each end, frame head-houses cover the stairways leading to the subway level.

The elevating of tracks through Jamestown will bring about the construction of a new passenger station for the city since it was necessary to raise the tracks about 14 ft. in front of the old station and allow the embankment to encroach on the station building. In order to provide facilities during the track elevation and until the location and plans for a new station are decided upon, a temporary frame station was built on the north side of the tracks about 1,700 ft. west of Main street.

The plans for the work at Jamestown were prepared and the actual construction was carried out under the general supervision of R. C. Falconer, until recently assistant to the president and chief engineer, and F. A. Howard, engineer of structures, while C. H. Splitstone, superintendent of construction, was in charge of the construction and track work, with T. C. Wulling, resident engineer, on the ground. The contractor handling the work since its resumption in 1923 was the Arthur McMullen Company, New York.

North Jersey Transit Plans

THE North Jersey Transit Commission has issued its annual report to the state legislature. The report repeats, without important modification, previous recommendations for rapid transit development in the territory, and in addition goes into considerable more detail than heretofore in discussing the engineering and financial problems involved.

The first line to be constructed, if the commission's recommendations are adhered to, will extend from a new railroad suburban station (serving the Delaware, Lackawanna & Western and the Erie) in the Hackensack river meadows just west of Jersey City, under the Hudson to a connection with the New York subway system in lower Manhattan Island, connecting with the Pennsylvania, the Hudson & Manhattan and the Central of New Jersey en route (see *Railway Age*, February 7, 1925, pages 351 and 368). Another line would be built from some point in West Fifty-seventh street, Manhattan, under the Hudson to a second proposed railroad suburban terminal at New Durham, just west of Weehawken, serving the West Shore (New York Central) and two of the Erie's lines. Eventually the Manhattan termini of each of these under-Hudson routes would be connected with each other by a New York subway—to be constructed, possibly in co-operation with the Westchester County, N. Y., Transit Commission.

Similarly the Jersey termini at New Durham and on the Hackensack meadows would be connected, making a loop line. Rapid transit electric trains would be operated on these routes to give steam railroad passengers service to and from the city proper. Eventually, if the railroads should electrify their suburban lines, their trains could be run directly through the tunnels to New York.

The commisison reports progress in its negotiations

with the railroads concerned as well as with the Port of New York Authority, the New York State Transit Commission, the Board of Transportation of New York City, the New Jersey Public Utilities Commission, the New York Rapid Transit Corporation, and the Interborough Rapid Transit Company. Of the railways, the Pennsylvania (handling 16 per cent of the commutation traffic in this district) has reported to the commission that it is prepared to consider seriously the commission's plan whenever it is ready to undertake construction; the Hudson & Manhattan has announced that it will build a line to the terminal on the meadows; the New York Rapid Transit (B. M. T.) professes a great interest in the possibility of extending some of its New York City subway lines to New Jersey; officers of the West Shore (8 per cent of the traffic) have announced that they will recommend the rearrangement of their terminal facilities in accord with the plans of the commission. Other railroads concerned have been less definite. The Central of New Jersey (19 per cent of the commutation traffic) has the plan under consideration and has asked for a modification of the War Department's requirements for depth of tunnels at the bulkhead line. The Erie (33 per cent of the commutation traffic) has made helpful suggestions and has the plan under advisement. The Delaware, Lackawanna & Western (23 per cent of the commutation traffic) has promised constructive criticisms.

The Lehigh Valley, which handles a relatively small commutation business, but over the right-of-way of which the commission recommends the routing of some of its lines, is so far noncommital.

Taxation and Assessment Recommended

The commission does not believe that private financing or public financing on a basis of prospective revenues from operation can be depended upon, since fares of from 11 to 16.5 cents would have to be charged per trip to pay expenses and meet capital charges. It believes that clear cut benefit zones have been observed when transit facilities have been improved. This fact, together with the recent great industrial and population increase in the zone, has suggested the advisability of relying on taxation and special assessments in benefit zones to raise the necessary funds. The commission recommends that an elective agency be given the task of carrying on the construction work, which commission could levy taxes and assessments.

The commission further recommends that conferences with interested parties continue, that studies of proposed methods of financing go on, that the loop line be the first to be undertaken, and that the line from the proposed meadows station to downtown Manhattan be the first to be built.

If the subway policy of New York City should not permit a tie-up of the Jersey transit lines with the New York subways, then an effort should be made connecting it with the proposed Westchester line, says the report. Proposed extensions of the Fourteenth street, New York (B. M. T.), and Forty-first street (I. R. T. Queens) subways to New Jersey should be built regardless of the loop line and financed separately. Any one of the commission's proposals could be taken up independently and carried to completion without waiting for the project to be carried out in any particular sequence.

The report contains elaborate studies of the proposed methods of financing, legal problems, benefit districts and traffic. There are also a number of maps giving details of the various plans proposed.

Warfield Decries Wage Increase in Southeast

S. DAVIES WARFIELD, president of the Seaboard Air Line, in a talk before the St. Petersburg Chamber of Commerce, February 21, indicated that the Seaboard would not take part in any future Southeastern group conferences on wages, rules and working conditions and that the Seaboard would henceforth take up these matters directly with its own employees. He pointed out that in the recently ended wage negotiation and mediation in the Southeastern region, the representative of the Seaboard had withdrawn from the group committee when it was voted to accept the Eastern group settlement in the trainmen's wage case, because the Seaboard considered that the Board of Mediation of the United States had not exercised its full powers in mediation of the matter, and that conditions did not warrant an increase in the Southeast equal to that in the East where traffic conditions were different. He also said that in view of the wage increases that would have to be paid, the Seaboard would curtail its large construction program in the Southeast.

With respect to the recent granting of a 7½ per cent increase in wages to trainmen in the Southeast, he spoke, in part, as follows:

The methods employed in reaching a settlement in the Southeastern Railroad Group displayed either lack of decision or understanding by the so-called Board of Mediation provided in the act, which was appointed by President Coolidge, of the purposes of Congress, or the act itself is incompetent in dealing with questions of so far-reaching a nature.

When wage increase was before the Eastern Railroad Group, which operate in thickly populated and rich traffic territory, by agreement between the representatives of the men and those of the group the questions involved went to arbitration and a 7½ per cent increase in that territory resulted.

The committee of eight representing the Southeastern Group, after the so-called Board of Mediation was supposed to have endeavored to mediate, requested that the increase asked by the leaders of the men of our Group be also arbitrated; this was declined.

Section 10 of the Railway Labor Act provides that failing in settlement or arbitration, on the application of any railroad or the railroads of a group, if in the opinion of the Board of Mediation there is threatened interruption of interstate commerce in any section of the country that the board shall ask the President of the United States to appoint an emergency board to investigate and report to the President. Since a strike vote had already been taken on all the railroads of the Southeastern Group it was the opinion of many that the committee of eight representing the group declining to proceed without arbitration or the appointment of the emergency board taken in connection with the strike vote constituted a sufficient menace to interstate commerce for the Board of Mediation to ask the President to appoint the emergency board in accordance with the act. The group committee suggested that the Board of Mediation ask for the appointment of the emergency board. My information was the the chairman of the Board of Mediation considered that there was not a threatened interruption of interstate commerce under the terms of the act, as the strike vote had not been announced and therefore the President could not be asked to appoint the emergency board, but I was also informed that the chairman asked the labor leaders not to announce the vote in the express hope of mediating the questions involved which had already failed of result unless the terms proposed were accepted. A vote was taken by the committee of eight, which unfortunately contained two representatives from two railroads which were properly in the Eastern Group who should have been disqualified from serving on this committee, resulting in five to three in favor of accepting the arbitrated award of 7½ per cent increase allowed in the Eastern territory, without arbitration in Southeastern territory.

The group committee of eight (one a Seaboard representative) instead of insisting that the question be settled under the provisions of the Railway Labor Act, voted to accept the Eastern Group settlement. The representative of the Seaboard voted against acceptance and withdrew from the committee. 1

have notified the chairman of the Presidents' Conference Committee, Southeastern Railroads, that in future conference on wages, rules and working conditions the Seaboard will not be a party to the proceedings of those who may represent the group and will hereafter take these matters up direct with our own men. The Southern Railway System was not represented on the group committee, its contract with its men not expiring until March 1.

The Transportation Act of 1920 provides for the adjustment of railroad rates by regions, that is to say, by the groups of railroads into which the country has been divided. Railroad rates differ in the several groups or districts. The men submit the questions involved in increase in wages to the same groups of railroads that deal with railroad rates from which wages are paid. There is no reason why the settlement of wage increases should not be made by each regional railroad group independent of and without interference by another group.

The full responsibility for the action recently taken cannot be placed on the representatives of the railroads alone. The Board of Mediation appointed by President Coolidge stopped short of its power for reaching the facts and basis for settlement under the provisions of the act for the reasons given, and if the terms of the act are not specific, then they should be made specific by amendment.

The Seaboard has granted an increase in wages of 7½ per cent to trainmen in its employ, reaching an agreement with its employees similar to that under the settlement between other Southeastern roads and its employees. It is understood that the agreement is effective from the first of February for one year.

Report on Savannah Collision

W. P. BORLAND, director of the Bureau of Safety, has reported to the Interstate Commerce Commission on his investigation of the rear collision of passenger trains on the New York Central at Savannah, N. Y., on January 9, about 3:24 a.m. The third section of the eastbound Twentieth Century Limited, No. 26, which had been stopped, was run into by the following section, moving at 30 miles an hour or faster, and the standing train was driven ahead about 110 ft. Two or three cars suffered serious damage. Engineman Scoville of the colliding train was killed and 54 persons were injured—40 passengers, 11 Pullman employees and three employees of the railroad. The fireman of the colliding train was injured, and his testimony was not taken until five days after the collision.

The trains were being run as sections of train No. 8, which precedes No. 26; the eighth section, passing a caution signal 1¾ miles back and a stop signal ¾ mile back, ran into the seventh. At Clyde, six miles west of Savannah, these trains were only two minutes apart. The seventh section had been stopped because, owing to the dense frost fog (temperature 8 deg. below zero), the engineman had failed to observe the indication of signal 32322; and also because of a burned out bulb in the electric headlight.

Engineman Butler of the seventh section said that signal lenses were coated with frost rendering them almost invisible. After passing the location of signal 32322, he brought his train to a stop and signaled for the flagman to go back; and it was estimated that the collision occurred about three minutes after the train had been stopped. Engineman Butler had missed two other signals because of weather conditions, and he said that but for the failure of the headlight bulb, he would have continued at low speed to the next signal.

The flagman of the seventh section went back and put down fusees, but a crossing watchman, 220 ft. back of the point of collision, gave testimony different from that of the flagman as to how far the latter had gone. This flagman said that he had had occasion to flag the eighth section at Wayneport and that on that occasion his hand signals were properly complied with. Fireman Henderson, of the eighth section, said that both Scoville and himself noted the caution indication of the distant signal (No. 32422) and that the engineman missed the indication of signal 32322 (the home signal), and made a remark to that effect. Some of the fireman's testimony is not very definite and he could not say whether the engineman shut off steam after passing the home signal. After Scoville said that he had missed the indication, the only sound that came from him was a groan, just before the collision occurred.

Crossing Watchman Van Voorhis, in a tower, 220 ft. back of the point of collision, told of the movements of the train flagman, who was recalled when he had reached a point about opposite the tower. The watchman, however, raised the window and warned him that the following train was near. The flagman ran westward but had gone only a few hundred feet when the eighth section passed him. The watchman thought that steam was shut off on the eighth section a short distance west of the tower, and the brakes applied. An autopsy on the body of the engineman who was killed, disclosed that he had breathed steam into his lungs, indicating that he had been alive at the time of the collision.

In its conclusion the report places the responsibility on Engineman Scoville. Testimony is conflicting as to just what action he took at the caution signal but it is evident that he took no effective steps to bring his speed under control. Had he applied the brakes at the time he missed the home signal, he would have been able to stop the train before it struck the train ahead. The testimony concerning the behavior of the flagman is not consistent, but as the trains were only two minutes apart, "it was clearly impossible for him to have gone back a sufficient distance to protect his train." The only reasonable ground for criticism of his actions would be in regard to throwing a fusee. He said that he did throw one off, but there was no evidence to support his statement. The report calls attention to the similar collision at Forsyth, N. Y., on the same road, December 9, 1923, and says that after that collision the New York Central rules were modified to require an engineman passing a caution signal always to limit his speed to not more than one-half the authorized maximum rate. The present collision lends further emphasis to the dictum that high speed trains should be brought under control at the caution signal. The highest speed permissible on the New York Central is 70 miles an hour, but an examination of train sheet records for nine days in January shows instances of over 100 miles an hour, indicating that the train sheet figures are not correct. Running trains at 80 miles an hour reduces the possibility of effective flag protection, and "the installation of automatic train control apparatus is clearly warranted"; and this particularly where, as in this case, the cautionary signal is only 4,998 ft. in the rear of the stop signal.

Engineman Scoville was 48 years of age; qualified as engineman in 1905, as passenger engineman in 1923 and for service on the fastest trains in May, 1926.

LEWIS L. BANKS, passenger trainmaster of the Middle division of the Pennsylvania, is one of eight brothers, all of whom hold positions in the employ of that road, and all in the Central region. Charles E. Banks is assistant ticket agent, Altoona; A. Bruce Banks, passenger conductor, Middle division; Edward A. Banks, train controller, Pittsburgh yard; Thomas L. Banks, telegrapher; George W. Banks, train dispatcher, Allegheny division; John D. Banks, train dispatcher, Philadelphia division; David E. Banks, assistant freight trainmaster, Middle division. This stalwart octette were all born in Mifflin county.

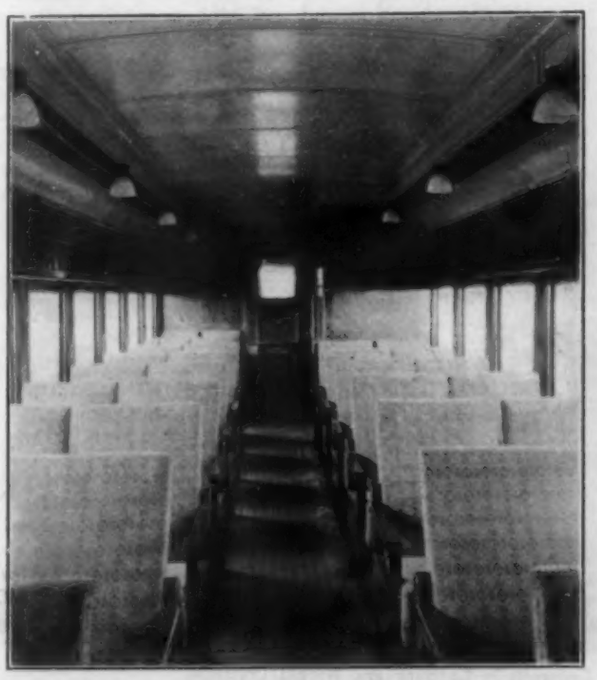
The D., T. & I. Gas-Electric Car with the Power Plants Carried Under the Car Floor

Two Gas-Electric Cars Put in Service on D. T. & I.

Each car displaces a passenger train, making a daily run of 280 *miles in regular service*

THE Detroit, Toledo & Ironton placed two gas-electric rail cars in regular service last October, and each of these cars is now making 280 miles a day between Delray, Mich., and Bainbridge, Ohio, maintaining the schedule of former passenger trains No. 1 and No. 2.

The cars are 72 ft. 6 in. long, 14 ft. high above the rail, and 10 ft. 4 in. wide, weighing approximately 66 tons apiece. There are four principal compartments in each car. Next to the operator's cab, which takes up 3 ft. 6 in. in the front end, is a 15-ft. mail compartment; then comes a 14-ft. baggage compartment; a smoking compartment 8 ft. 10 in. long, containing three double seats on each side, and a passenger compartment 26 ft. in length, containing 17 double seats. The total seating capacity of the car is, therefore, 46. A vestibule at the rear is provided with a door at each side and one at the end for use when coupled to another car.



The Main Passenger Compartment Has 17 Double Seats

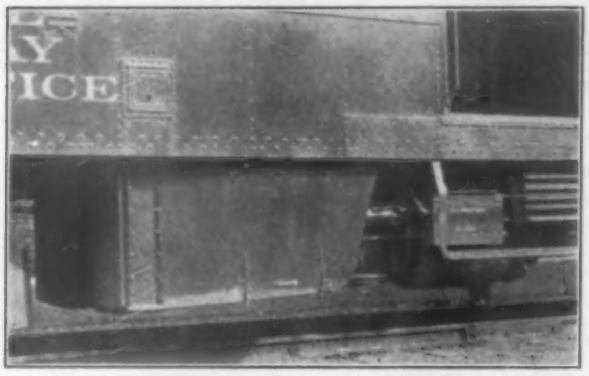
The Front End of the Car

Aluminum Alloy Used Extensively

The underframe and car body are of steel construction, made to D. T. & I. specifications by the Pullman Car

& Manufacturing Corporation. Aluminum alloy is used extensively in the construction of the cars. Furnished in sheets 1/16 in. thick, it covers the roof sheets of the upper and lower decks. The inside finish is aluminum; metal parts of the lighting fixtures are made of aluminum and are mounted on the lower deck sill about 6 ft. apart, and the conduit which encloses all wiring is also of aluminum.

The side, end and vestibule doors of the passenger compartment are made of Mexican mahogany, as are also the window sashes. The seats are of the station-



The Power Plant Housing Contains the Radiators at the Front—The Generators Are Shown at the Rear

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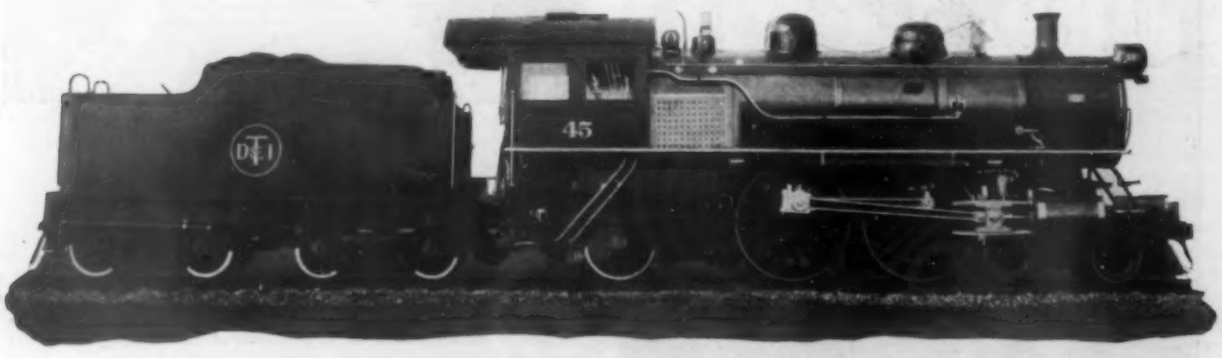

Recently Rebuilt D., T. & I. Locomotive, Lustrous in Lacquer and Nickel Trimmed

What Kind of Railways Do We Want?*

Character of service, wages paid and rates necessary will depend on public attitude as to regulation

By Samuel O. Dunn
Editor of the *Railway Age*

WE have arrived at a very interesting period in the history of railway development and regulation. The most important and significant question respecting railways the American people can now ask, and also answer, is, "What kind of railways do we want?" They will not necessarily get the kind they demand. They will get railways that can and will render good service only if they both demand good service and show they are willing to pay for it.

The question of what kind of railways the public wants is especially apropos at present because of recent progress and present conditions. It has been only a few years since, in almost every respect, the railway situation was very unsatisfactory. Many people were being killed in accidents. The movement of freight was slow and uncertain, and large car shortages prevailed, resulting in heavy losses to all business interests. The net return earned by the railways declined until only five years ago it reached the lowest percentage in history. Railway securities became a drug on the market.

Great Improvement in Railway Situation

There has been a remarkable change. The number of persons killed in railway accidents has been greatly reduced. Owing to better co-operation with shippers, better operating methods and the improvement and expansion of railway plants by the investment of a large amount of capital, there has been accomplished an improvement in freight service that is saving the public literally billions of dollars annually. The net operating income earned has increased until for the railways as a whole it approximates what the Interstate Commerce Commission has held would be a "fair return," although most of the railways of the western group are still earning much less.

Most business men rejoice with railway security owners and officers because of the improvement in the railway situation that has occurred. They know it is worth many times more to finance, industry, commerce and agriculture than to railway owners. But when the railways become able to earn the so-called "fair return," there are certain to be started movements the success of which would prevent them from earning any more than this in good years, or even equalling it in poor years. Railway employees have started a movement, already partially successful, for advances in wages which obviously is predicted largely on the ground that the railways can afford to pay more. Already we hear some demands for reductions in rates that are supported by the argument that the railways can afford to make them.

Inconsistent Attitude of Public

The standards of service and of living that the American people demand, and the attitude of many or most of them toward railway rates and earnings, are remarkably inconsistent. They demand not only comforts, but luxuries of all kinds, and in their general living usually seem prodigally willing to pay for them. They demand the best of service from the railways, but, if we may judge by the policy of regulation many of them seem to favor, they are not willing to pay for it.

In whatever direction you look your eye rests upon some evidence of the universal tendency of our people to demand luxuries and to spend their incomes lavishly to get them. It prevails among the working classes as well as the rich. The way we spend money is the only thing that astonishes the rest of the world more than the way we make it., Every family wants bath rooms, electric lights, a telephone, a radio, and is discontented without them. It is our most expensive hotels, whether in large cities or at winter and summer resorts, that are most crowded. We spend billions in the construction of highways and tens of billions to own and operate passenger automobiles. Owing largely, no doubt, to the universal influence of the moving picture, the people of the small towns as well as of the large cities follow rapidly all the changes in styles of hats, clothing and shoes at an enormous expense. We make multi-millionaires of the manufacturers of chewing gum, cigarettes and cosmetics. The high cost of bootlegging does not prevent us from paying exorbitant prices for doubtful alcoholic fluids. We know conveniences and luxuries come high, but we buy them on a grand scale, pay for them gladly and often value them more because of the impression they make on our neighbors than because of their contribution to our private happiness.

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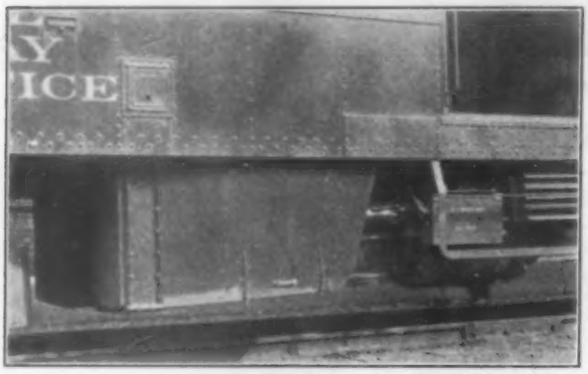
& Manufacturing Corporation. Aluminum alloy is used extensively in the construction of the cars. Furnished in sheets 1/16 in. thick, it covers the roof sheets of the upper and lower decks. The inside finish is aluminum; metal parts of the lighting fixtures are made of aluminum and are mounted on the lower deck sill about 6 ft. apart, and the conduit which encloses all wiring is also of aluminum.

The side, end and vestibule doors of the passenger compartment are made of Mexican mahogany, as are also the window sashes. The seats are of the station-



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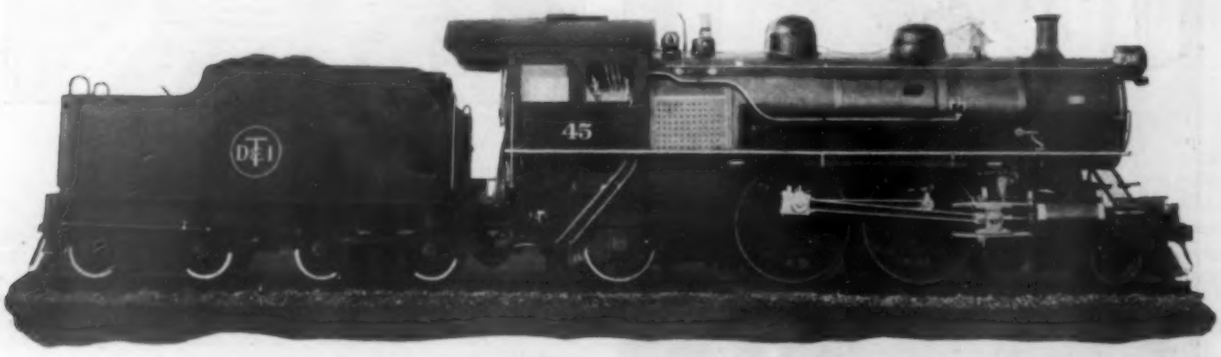

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and under legislation passed by Congress the Interstate Commerce Commission is requiring the carriers to make extensive and costly experiments with automatic train control.

We have good railways now. Mile for mile their physical condition and service compare favorably with those of any other railways in the world that are operated to handle traffic of similar kinds and volume. To satisfy the public demands being made on them would, however, necessitate the investment of an enormous amount of capital. It would have to be invested partly to enlarge the service rendered, and partly to make improvements that would neither increase the service nor reduce its cost. The elimination of all highway grade crossings, for example, probably would cost eighteen or nineteen billion dollars without effecting any considerable saving in operating costs to offset the enormous increase in fixed charges that it would cause.

High Cost of Meeting Demands

To meet even more reasonable demands would make necessary a huge investment. The satisfactory handling of a dense traffic, and the simultaneous safe operation of high speed passenger trains, over the same lines, requires two or more tracks, but more than 80 per cent of our railway lines still consists of only one track. When the time comes that the density of traffic of a line, and the service demanded of it, require it to be double-tracked, its grades and curvature should also be reduced as much as practicable, and it should be heavily ballasted. It would cost billions to double track and make necessary incidental improvements in all the lines on which a second track is or soon will be needed to furnish the kind of freight and passenger service the public demands. A busy line cannot be operated with maximum safety without automatic block signals, but only 20 per cent of our railway mileage is equipped with the automatic block system and only 40 per cent of it with any kind of block system.

The investment of capital the railways have made within recent years has enabled them so greatly to improve their freight service partly because in no year since 1920, excepting 1926, was the increase in freight business as large as was regarded as normal before the war. If we are to have as large increases in freight business year by year in future as before the war, either there will have to be a relatively larger railway investment made in future than within recent years, or freight service will deteriorate. Industry and commerce have become adjusted to hand-to-mouth buying, and most of the improvements in financial and business conditions and methods that are attributed to reduction of inventories and hand-to-mouth buying would soon be lost if freight service should become as poor as it was from 1916 to 1920.

What Does Public Want?

Is present good freight service to be not only maintained, but improved? Are accidents of all kinds on railways to be steadily and rapidly reduced? Is the public demand for more luxurious as well as faster and more dependable passenger service to be satisfied by the provision of more compartment cars, more club cars, more barber shops, bath rooms, maids and valets on trains? Is the almost universal public demand for larger, more handsome and better equipped passenger stations to be satisfied? In brief, are all the improvements to be made in the railways, by an enormous expenditure of capital, that will be necessary to enable them to furnish the public, in all parts of the country, the good and constantly improving service, both passenger and freight, that the public constantly and insistently demands?

Public Cannot Afford Poor Service

There is no good reason why the adequacy, reliability, speed, safety and luxury of railway service should not be made and kept in harmony with the standards of the other kinds of services, and of the commodities and conditions of living which our people demand and are willing to pay for. It is in no spirit of disparagement of our national passion for motoring that I say that a people that can afford to own and operate about twenty million passenger automobiles cannot afford not to pay what is necessary to have the very finest railroad system and the highest standards of railway service that capital and the constructive genius of men can provide.

And yet we may not have them. The reason is that almost every class of the public assumes toward the railways a different attitude from that which it assumes toward almost any other concerns that render it service or provide it with commodities, whether necessaries or luxuries.

The public demands luxurious service in sleeping and parlor cars constantly increases. This service costs more and is worth more than transportation in day coaches. Nevertheless persons who spend hundreds or thousands of dollars a year for useless luxuries and never complain about the cost, do complain about the extra charge for extra service in sleeping and parlor cars, and try to get Congress to pass a law to abolish it.

A few months ago the largest crowd ever assembled in a football stadium witnessed the Army and Navy game in Chicago. Those attending it came from all over the country. The newspapers commended the hotel managers for not advancing their rates while the crowd was in town. They secured a special reduction of railway rates for the occasion, and did not commend it.

In what respect is the railroad business so peculiar that in other kind of business it is reasonable for increased demand to result in increased or at least not reduced rates or prices, while in the railroad business it is reasonable for it to result in reduced rates? Why should the law of supply and demand operate in one way in other lines of business, and in exactly the opposite way in the railroad business?

Railway Rates for Distressed Industries

There are constant demands that railway rates shall be reduced to help some industry that is in distress because of general economic conditions or because of the way it has been managed. This is well illustrated by the agitation for reductions of freight rates on farm products in the west. The average wholesale price of farm products is now 35 per cent higher than before the war. The average freight rate of western railways is 34 per cent higher. The average wholesale price of all commodities, except farm products, is 53 per cent higher. Obviously, therefore, the troubles of the western farmer are not due to a change in the relations between the freight rates on his products and the prices he can get for them. No doubt they are largely due to the fact that a given amount of his products will now buy only 80 per cent as much of other commodities as before the war. The high prices of the products of industry are largely due to high wages. Now, it has repeatedly been suggested and urged that for the relief of agriculture the rates of western railways should be reduced, but nobody has suggested that for the same purpose the prices of industrial products should be reduced. Where is the man who has the temerity to suggest that the wages of industrial and railway labor shall be reduced to make

possible reductions of prices and of rates for the relief of the farmers?

The union miners recently have afforded a minor but most significant illustration of the tendency many classes of people have to try to get railway rates so adjusted as to remedy conditions for which the railways are in no way responsible. They have filed a petition with the Interstate Commerce Commisison asking it, in fixing rates on coal from the Pennsyivania and West Virginia mines, to take into consideration the fact that the union wages paid in the Pennsylvania mines are higher than the non-union wages paid in the West Virginia mines. Nobody has proposed that the industries or domestic consumers of the country should pay higher prices for union than non-union coal, but it is seriously suggested that the railways shall be required to make relatively lower rates on union than on non-union coal.

Subsidized Competition with Railways

Our people in various parts of the country constantly enlist the assistance of the government in promoting competition with the railways on highways and waterways. The construction and operation of the Panama canal by the government, and its failure to regulate the steamships using it, or to let the railways make competitive rates, have deprived the railways running west from Chicago of a large part of their business and helped prevent them for six years from earning the so-called "fair return". The services of the government and the money of all the tax payers are also enlisted to improve inland waterways to compete with the railways; and since private capital invested in boat lines was not able to compete successfully on our largest system of rivers the government itself has engaged in the operation of the Mississippi Warrier boat service.

It is said this confers benefit on the public by reducing the cost of freight transportation. Perhaps this is true, and business men generally regard it with complacency and favor. But would manufacturers like to have the government subsidize or directly engage in manufacturing to reduce the cost of their products to the public? The fact that business men would be shocked and outraged by, and would denounce as un-American and socialistic, government subsidizing of competition in other fields, affords a striking illustration of the difference between our attitudes toward the railways and toward other industries.

It may be answered that the railways are different from other industries because engaged in a "public service." That gives the government special legal power to regulate them, but neither in law, equity nor economics can there be found a reason or argument for governmental subsidizing of competition with railways to reduce the cost of transportation that cannot be used with equal logic and force in favor of governmental subsidizing of competition with manufacturers, merchants or bankers to reduce prices or interest rates in the real or supposed interest of the public.

Regarding a "Fair Return"

The railways render an essential public service. Therefore, it might not seem unreasonable to expect that we would be especially solicitous to have them earn large profits in order to assure their ability to render that service satisfactorily. On the contrary, we have adopted a policy of regulation based on the fundamental principle that the rates of railways should be so fixed as to enable them to earn only a fair return on the fair value of their property; and we do not deem it at all necessary to be consistent in applying that principle. The Interstate Commerce Commission, which represents the public in regulation, made a tentative valuation of the railways in 1920 which was extremely low because based mainly on pre-war wages and prices. It held they were entitled to earn a certain percentage upon it, and it fixed rates which it was assumed would yield that return. It was not anywhere near earned in 1921 or 1922. Regardless of that, the commission made a general reduction of rates, and in consequence four years more passed before the so-called "fair return" was earned by the railways as a whole, and it has not been earned in the western district yet.

There was no general condemnation of the commission for its persistent failure to carry out during these years what the federal government had definitely and solemnly declared in the Transportation Act was to be its policy in regulating the railways. Is it not an illustration of a strange public psychology that public opinion did not react unfavorably to this failure of a government body to carry out a plainly announced government policy.

Within the last six years the railways failed by a billion dollars to earn the so-called "fair average annual return" which the Transportation Act and the Interstate Commerce Commision declared they were entitled to have the rates fixed to produce. It would be only consistent for the commission to let the railways earn an excess of one billion dollars over the so-called "fair return" during the next six years. Would those who found no fault with it for fixing rates that during the last six years failed to produce a fair return keep equally quiet if it should so fix them during the next six years as to produce proportionately more than a fair return?

What Will Be Public's Attitude?

How can we expect or hope to have the kind of railways we want, and get the kind of railway service we want and demand, if so many maintain such a strange and utterly inconsistent attitude toward railway rates and earnings, and if this attitude is to dictate our governmental policy in dealing with the railways, as it usually has since effective regulation was adopted about twenty years ago?

It is easy to foresee what would be the results in future of the kind of regulation many people still seem to want. In 1910, in a period of rising wages and prices, the railways sought a general advance in rates which was generally opposed by shippers and was denied. The net return earned by them then began steadily to decline, and railway development declined with it. The five years of congestion and car shortages of 1916 to 1920 were mainly due to the policy of regulation that prevailed during the preceding five years.

The attitude of the public toward the railways has changed greatly within recent years. It must not revert to what it was before the war. It must change still more. The public must quit looking upon the railways as a peculiar industry whose charges should be manipulated to help out every other industry or class of people that gets into trouble, and as one that can raise immense amounts of capital and provide good and constantly improving service upon a financial return regulated largely regardless of the return earned in other industries, or even regardless of what the courts have held is the minimum to which a public service concern can be restricted without confiscation of its property. There is no power that can compel railways or any other commercial industry to provide something it has not or cannot get the earnings and capital to provide.

It may be said that the development of our railways in every part of the country into the most perfect means of

transportation that can be created, and the provision by them of corresponding service, will increase the burden of transportation costs that the public must bear. Insofar as the public, by one means or another, successfully insists upon unproductive improvements, such as the building of spacious and beautiful passenger stations and the elimination of grade crossings, the tendency will be to increase transportation costs and the rates that must be charged. On the other hand, most of the improvements needed in our railway system will, if made, actually tend to reduce the cost of transportation.

What we must get firmly fixed in our minds is that there is one way, and only one way, in which the railways can meet the various demands made on them by their employees and the public. The principal demands are for higher wages, unproductive improvements such as elimination of grade crossings, better service and lower rates. If some or all of them are made on too large a scale they can not all be met. Insofar as they are reasonable they can be met only by policies of regulation and management which will cause a very large investment of capital to be made in the railways year by year. The investment in them increased from less than $75,000 to more than $97,000 a mile, or about $23,000 a mile, during the last ten years. It would not only be impossible for them to handle their present traffic, but also impossible to pay as high wages and charge as low rates, as at present if this investment had not been made. They would be able to pay even higher wages or charge lower rates, if the investment made had been larger.

A False Assumption in Regulation

These facts need to be strongly and repeatedly emphasized, because our present national policy of regulation is based mainly on an assumption that is dangerous alike to employees, to the public, and to owners of railway securities. The assumption referred to is that the main purpose of regulation should be strictly to limit the net return the railways may earn—that such limitation will result in the employees getting higher wages or the public lower rates than would otherwise be the case, or in benefits of both these kinds to employees and the public.

This assumption is wholly false, and is dangerous because it ignores, first, the part that the investment of adequate capital plays in making possible economy in railway operation, and, secondly, what is necessary to get adequate capital invested.

It is a remarkable fact that in this country, where the accumulation and skillful investment of capital in industry on the grandest scale ever known in the world have made possible the relatively large incomes and high standards of living of almost all classes of our people, there should be so little recognition by the public and regulating authorities of the part that capital invested in the railroad industry plays in promoting the public welfare. Without adequate capital the railways cannot render the adequate, good and improving freight and passenger service the public demands. Of no less importance is it—although the fact is constantly overlooked by most people—that without an adequate investment of capital they cannot effect large economies in operation.

Vast Savings Made Possible by Capital

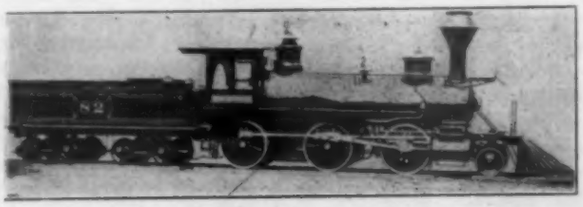
Capital, when invested in most kinds of railway improvements, makes it possible to reduce the number of man hours of labor and the number of tons of fuel and materials required to produce any given amount of transportation service. Wages are the largest item of expense in the railroad, as in every industry. The traffic handled increased largely during the last ten years, but the number of hours employees worked and were paid for was less in 1926 than in 1916. If the number of hours of labor that had to be paid for had increased as much in proportion as the amount of traffic handled the wage bill alone of the railways in 1926, at the average hourly wage actually paid, would have been about $800,000,000 greater than it was. This great saving of labor, and other large economies effected, have been made possible by capital that has been invested in better tracks and terminals, better and more powerful locomotives, larger and better cars and other improved facilities; and without these economies it would have been impossible for the railways to have increased the average hourly wage of their employees about 125 per cent, while their average freight and passenger rates increased only about 50 per cent, and remained solvent.

Return Earned Will Determine Investment

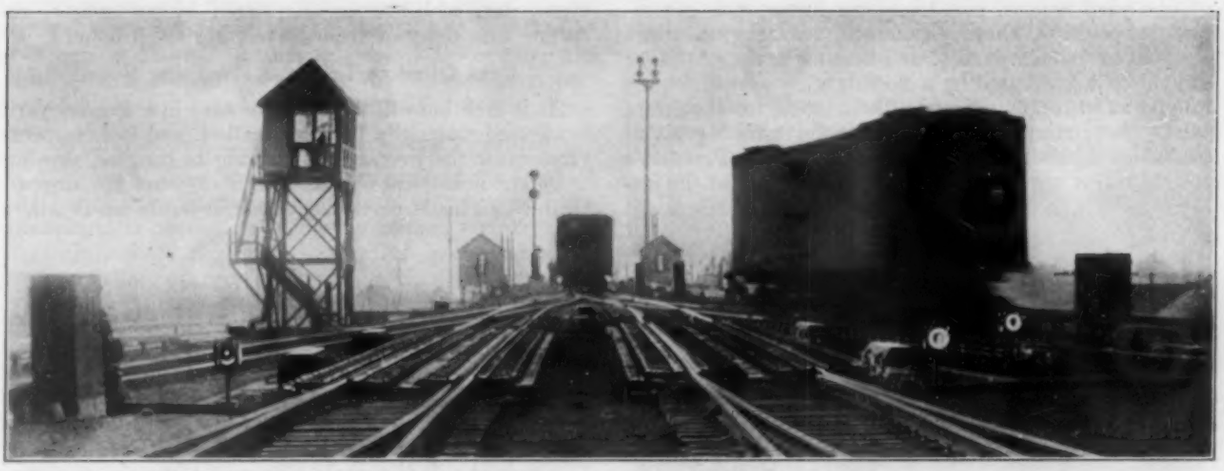
It is axiomatic that the amount of capital that can be got invested in an industry, and the terms upon which it can be obtained, depend upon the return that can be earned and paid upon it. Nevertheless, although it will require year by year the investment of many billions of dollars to enable our railways to make the improvements and render the service the public demands, to pay an increasing average wage without rendering it impossible to make lower rates, the net return earned by the railways is the target for attacks by every radical public man and labor leader; and the regulating machinery of government is used mainly to ascertain what is the lowest return to which they can be restricted and to make sure they do not get any more.

Very few seem to realize that in regulating the return earned they are determining the capital that will go into the industry and thereby, to a very great extent, the efficiency and economy with which it can and will be operated.

Before the war regulation that resulted in a declining net return caused a reduction in railway development which finally produced the prolonged congestions of traffic and car shortages from 1916 to 1920. Within recent years an increasing net return has caused a great increase in railway development and improvements which have resulted in large economies in operation and the abolition of "car shortages." Only prosperous railways in which investors are glad to invest their capital in large amounts can pay good wages and at the same time furnish good service at the lowest practicable cost. As long as a large part of the public and regulating authorities continue to entertain the economic hallucination that the prosperity of the railways is incompatible with the payment of good wages and the rendering of good service at reasonable rates we will be in constant danger of a return to the days of car shortages and unnecessarily increasing operating costs.



The "John B. Carson" of the Hannibal & St. Louis



Car Passing Through Car Retarder at Blue Island Hump Classification Yard of Indiana Harbor Belt

Yard Equipped With Car Retarders Classifies 2,000 Cars a Day

Indiana Harbor Belt rebuilds restricted layout resulting in efficient operation under all weather conditions

BLUE ISLAND yard, originally a flat switching yard a half mile in length, on the Indiana Harbor Belt between South Racine avenue and Halsted street, on the southwest side of Chicago, was rebuilt last summer and modern equipment installed as a result of which this yard is now affording an unusually interesting performance. All of the western and northern railroads enter the Chicago area either at or west of Blue Island and all of the eastern and southern lines at or east of Blue Island, thus adapting this location for the handling of interchange traffic.

The best layout that could be devised without moving the yard several miles east or west, which would have necessitated serious back-haul of traffic, was secured by closing Racine avenue and extending the yard a full mile between Halsted street and Ashland avenue with leads extending west to the cross-line of the Baltimore & Ohio, Chicago Terminal and east to the Illinois Central. This condition forced the building of train and receiving tracks paralled to and adjoining the classification tracks as shown on the plan. The final plans call for a fourth lead on the west end so that there will be a separate lead for each receiving yard and two leads to the hump.

Converting this flat switching yard into a power-operated hump classification yard, including the installation of a G-R-S all-electric car retarder system, was accomplished in less than six months' time. The record follows:

February 22	work authorized
March 11	filling for embankment started
June 1	track work started
June 17	retarder installation started
August 13	installation placed in service

The Layout Is Now Handled by Small Crews

The north and south receiving yards consist of three and five tracks of 100 cars' capacity each, located parallel to and on the north and south sides, respectively, of the classification yard. In addition, two ice-house receiving tracks hold 100 cars each. This plan permits hump engines to pull cars out of one receiving yard while trains

Blue Island Classification Yard from Top of the Hump

are arriving in the other yard. The departure yard consists of three tracks, each holding 100 cars.

The grade of the classification yard after leaving the last retarder is at present 0.25 per cent although 0.3 per cent is ordinarily recommended. The operation of the yard, so far, shows that a lighter grade is required to overcome curvature than was originally contemplated. The grades throughout the yard are balanced to handle all kinds of traffic.

The hump yard crew for each eight-hour shift consists

of one yard master, one hump conductor, five car retarder operators, three switchmen, two engine crews (engineman and fireman), and one maintainer. Night switching is facilitated by a floodlighting system, so arranged as to supply adequate illumination for the entire yard. Approximately 50 per cent of the traffic is perishable, which is handled on very close schedules. Perishable freight trains are checked as they are spotted at the icehouse, which facility provides for the icing of 80 cars at a time at a speed of two cars per minute. During peak periods, it is necessary to ice approximately 1,500 cars daily, which frequently involves humping 200 cars per hour.

Switching Lists Prepared on Telegraph Printers

As soon as a train arrives, the waybills are brought to the yard freight office at the east end of the yard. Here the rate clerk checks them for diversions and reconsignments. They are then turned over to an operator who transmits the switching lists to the towers by means of a telegraph printer, which means the switching lists are made available within five to ten minutes after the arrival of the trains. The telegraph printer installation consists of Teletype printers with a transmitting machine in the yard freight office and receiving machines in the yardmaster's office at the top of the hump, in the junction tower near the top of the hump, and in each of the four retarder towers. By the time the humping engine is able to take its drag from the receiving yard to the hump lead, the switching lists are in the hands of those needing them. The switchman at the head of the hump knows how many cars go in each cut, and the tower operators know to which track the cars are to go. Prior to the installation of the Teletype system it was necessary to prepare manifold copies of the lists on a typewriter, which were distributed by messenger, resulting in a delay of from 30 minutes to an hour.

Cars Oiled to Increase Humping Speed

As is well known, the speed of cars in a gravity yard is affected materially by cold weather, and low temperatures cause the journal box packing to congeal, slowing down the movement of the cars, if they are not stopped entirely. This is particularly true in hump yards where car riders are employed and it is frequently necessary to put the cars over the hump at such speeds as to cause considerable damage through rough handling. To overcome the difficulty, the cars pass a car-oiling plant, just before the top of the hump is reached, which plant is the invention of E. M. Wilcox, master car builder. This plant consists of two oil storage tanks, each of 200-gal. capacity sunk in the ground next to the first track north of the hump. Oil is pumped from these tanks to an oil-heating house immediately adjacent to the classification yard lead near the top of the hump, where there are two tanks with steam coils inside in actual contact with the oil, operated by a regular Baker car heating system. The oil is heated to a temperature of 200 deg. F. in the heating plant. A hose, with a needle valve nozzle, leads from the heating plant to the track where the oil is delivered to the journal boxes at a temperature of about 185 deg. To do this, two men open the journal box lids of the cars to be humped in the receiving yard and two men at the heating plant, one at each side of the track, using the oil hose, have ample time to spray a sufficient amount of hot oil into the open journal boxes as the cars go over the hump and to close the lids while the cars are moving past them. The oil is so injected that after a few turns of the axle the journal box packing is well saturated with the hot oil. This operation

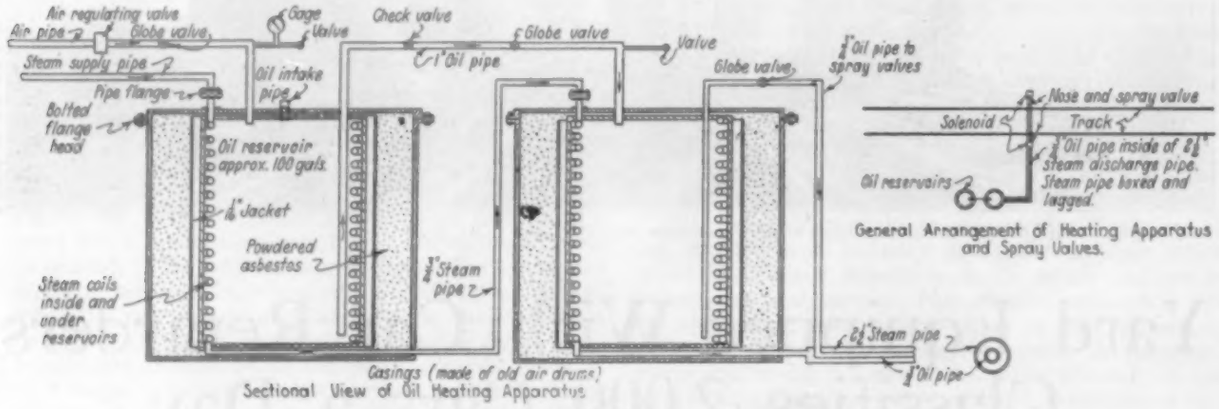
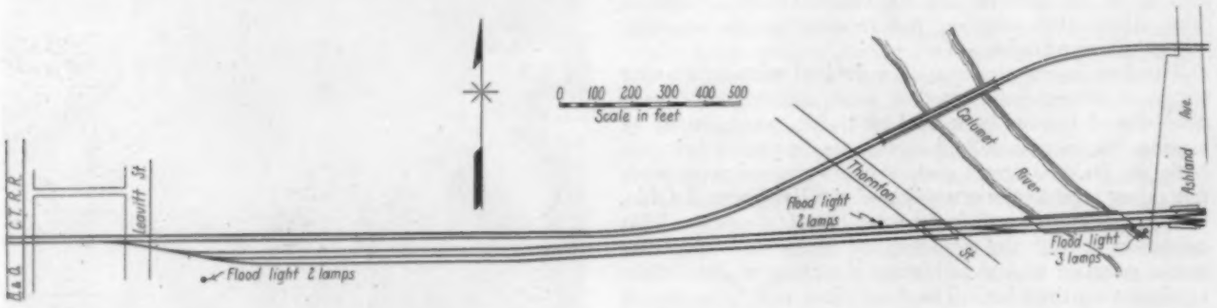


Diagram Showing Details of Oil Heating Plant



causes no delay to the cars going over the hump and results in their running easily and smoothly, regardless of weather conditions. Automatic devices for opening the lid, injecting the oil and closing the lid have been perfected by Mr. Wilcox and will be installed shortly.

A Signal and Loud Speakers Are Provided

A two-arm, four-light signal situated at the head of the hump governs the movement of the cars over the hump and is controlled by the switchman who cuts the cars as they go down the grade. Its principal use is to signal the engineman who is pushing the cars over the hump, to stop, slow down, or back up as the case may be. In most instances, the drag is pushed over the hump at an even speed of four miles an hour without interruption until all the cars are over. Occasionally, however, a refractory uncoupling device causes delay which might result in a tangle, if it were not for the signal. When the switchman is unable to uncouple a car as it is pushed past him, he turns to the signal control lever, which is so situated as to be immediately behind him and transmits his desires to the engineman immediately. The cut is stopped at once, the uncoupling made and the cut started over the hump again with only a few seconds' delay.

To facilitate communication further, loud speakers have been installed in each of the towers, at the yardmaster's office and in the open at the switchman's station at the top of the hump. These enable all employees concerned in the operation of the yard to keep in constant communication with each other, thus greatly increasing the co-ordination of the yard force. By means of the loud speaker system the few tangles and mistakes possible under the present yard operating system are immediately made known to the entire force and rectified in the minimum amount of time.

The Car Retarder Installation

After the cars are cut and rolled down the hump their movements are controlled by a car retarder and switch machine installation in the classification yard. This installation is governed by an operator in a control tower situated at the track side just beyond the crest of the hump and by retarder operators in each of four towers located at strategic positions in the yard itself.

The equipment is known as the G-R-S all-electric car retarder system and is similar to those systems installed at East St. Louis, Ill., and at the southbound unit of the Markham terminal on the Illinois Central and at Hartford, Conn., on the New York, New Haven & Hartford, details of which were described in the March 6, 1926, issue of the *Railway Age*.

The Blue Island installation consists, at present, of five control machines, each located in a separate tower, controlling a total of 51 retarders and 29 switches.

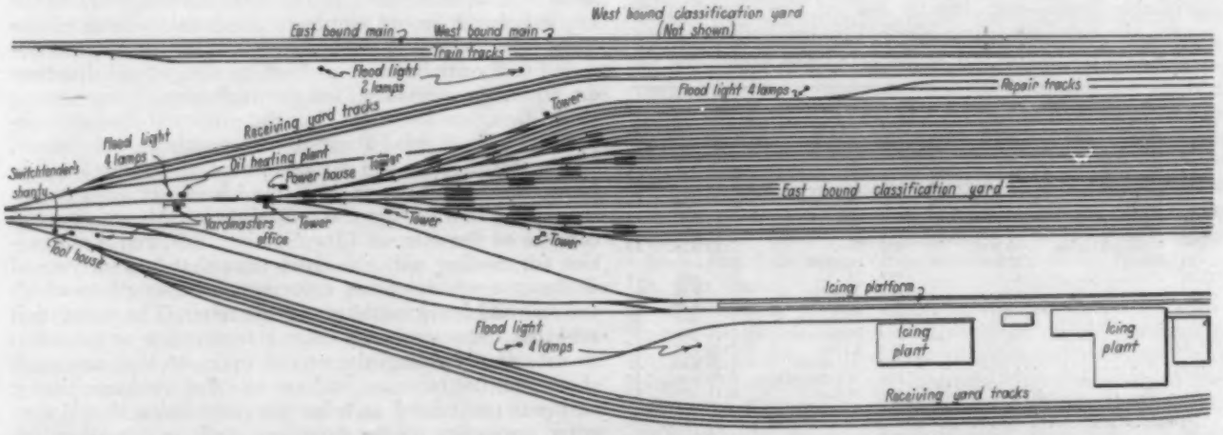
Injecting Hot Oil Into Journal Boxes as Cars Are Pushed Over the Hump.

Energy for the plant is furnished by a storage battery on floating charge by motor-generator sets in duplicate. It has ample reserve capacity to operate the plant several hours during any interruption to the external source of current supply.

Method of Operation

On average days and peak periods only two engines have been required. Each engine does its own trimming, although very little of this is required. Briefly stated, the simultaneous movements are as follows:

Engine 1 is humping.	Engine 2 goes after a switching cut.
Engine 1 finishes humping.	Engine 2 enters approach track.
Engine 1 trims if necessary.	Engine 2 pushes cut to top of hump.
Engine 1 goes after switching cut.	Engine 2 is humping.



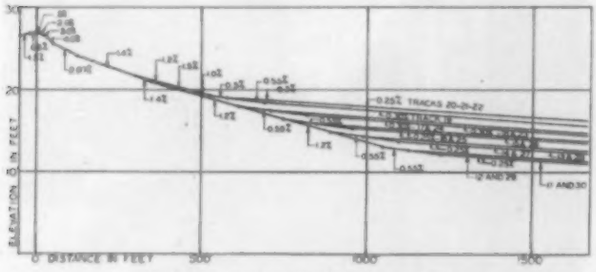
The Track Lay-Out of the Indiana Harbor Belt Classification and Receiving Yards at Blue Island, Showing Retarder Installation

This process is repeated alternately and is so well timed that there is seldom more than a brief intermission between trains humped.

The major benefits derived from this installation are lower operating costs and facter classification of cars. There are other benefits, however, which, in the aggregate are not less important. The capacity of the yard

is increased and damage to equipment and lading is reduced. Weather variations have practically no effect. Car-riders, switch tenders and skate attendants are released for other work, personal injuries are reduced and the delay experienced in securing additional car riders during peak traffic periods eliminated. The amount of motive power necessary for yard operation is also reduced and the use of all cars increased.

The classification in this yard is handled somewhat differently than is the practice on most railroads, because it is a belt line yard. Instead of being classified in station order, as is done on trunk line railroads, the



Profile of Blue Island Hump Yard

cars put over the hump at Blue Island yard are classified according to the railroad to which they are to be delivered. A separate track is assigned for cars destined to each railroad, certain roads requiring two tracks. For example, all cars going to the Erie are put on track 3 and when this track is full, Erie cars go into track 4.

Under this arrangement, the engine making up the outgoing train at the east end is enabled to pick up its train from adjacent tracks and traverses a minimum of the restricted space over the crossovers at the east end of the yard. This effects an important saving in time in view of the difficulties encountered in excessive engine and car movements across the busy grade crossing at the end of the yard.

Cars are usually pulled from the classification yard as soon as the tracks are full. A large percentage of the perishable trains run directly out of the classification tracks, the cabooses being handled by the hump engines. The waybills are checked as the cars come down into the

Arriving Trains				Departing Trains			
Train	Conductor	Arrival	Cars	Train	Conductor	Departure	Cars
404	Palkey	2:46 p.m.	88	404	Palkey	4:07 p.m.	56
410	Hartman	2:52 p.m.	24	325	Grieg	4:45 p.m.	57
257	Sherwood	3:24 p.m.	84	257	Sherwood	5:04 p.m.	61
422	McGrath	4:15 p.m.	62	150	Lawrence	5:15 p.m.	65
1607	R. I.	4:15 p.m.	38	422	McGrath	5:44 p.m.	18
407	Newhouse	4:33 p.m.	31	407	Newhouse	6:24 p.m.	37
253	Mathews	4:38 p.m.	41	418	Vandenbenden	7:25 p.m.	57
418	Vandenbenden	4:46 p.m.	70	423	Fox	7:26 p.m.	33
423	Fox	5:32 p.m.	62	320	Scanlon	7:28 p.m.	9
....	.....	.....	...	7989	M. C.	7:32 p.m.	24
....	.....	.....	...	263	McCain	7:37 p.m.	62
....	.....	.....	...	400	Steineck	7:41 p.m.	68
....	.....	.....	...	150	Lawrence	7:43 p.m.	30
....	.....	.....	...	162	Patterson	7:46 p.m.	71
....	.....	.....	...	325	Krieg	7:48 p.m.	17
....	.....	.....	...	318	Albrecht	7:58 p.m.	25
....	.....	.....	...	314	Weatherspoon	8:09 p.m.	34
....	.....	.....	...	406	Miller	8:18 p.m.	42
Total			500	Total			766

classification yard and by the time a track is ready to be pulled from the east end, the yard clerks have the waybills ready for the conductor of the outgoing train.

The classifying capacity of Blue Island hump yard is 200 cars an hour or 4,000 cars a day. The maximum business yet recorded for a 24-hour period was 2,766 cars classified, which consisted of 934 cars on the first shift, 980 cars on the second and 852 cars on the third. The largest number classified on an eight-hour shift was 1,190 cars between 3 p.m. and 11 p.m.

Another record was made on October 21, 1926, as shown in table in preceding column.

In addition to the 500 cars of perishable and time freight shown in the total of the first column, the hump engine switched 202 cars of freight that were in the yard before 2:46 p.m., making a total of 702 cars. The first cut went on the hump at 3 p.m. and the last cut was switched at 7:07 p.m., 502 separations being made in the 702 cars. Of the 500 cars of perishable and time freight, 407 were re-iced, the last one at 6:45 p.m. Summarizing the above performance 500 cars of time freight and perishables were received in 2 hr. and 46 min. and 18 freight trains and transfer deliveries carrying a total of 766 cars were dispatched in 4 hr. and 11 min., as shown in the total of the second column; while 702 cars were put over the hump in 4 hr. and 7 min. and 407 cars were iced in 3 hr. and 59 min.

Indicative of the practicability of the equipment under winter conditions on January 12 and 13 of this year there was a severe blizzard, which piled snow approximately 14 in. deep on top of the hump and classification yard tracks and which was followed by a decline in temperature to 14 degrees below zero. The entire system operated satisfactorily throughout the severe weather which lasted several days.

Southwestern Railroad "Merger" Case Argued

WASHINGTON, D. C.

ORAL arguments were heard by the entire membership of the Interstate Commerce Commission on February 17 and 18 on the applications of the Kansas City Southern for authority to acquire control of the Missouri-Kansas-Texas and of the latter to acquire control of the St. Louis Southwestern, in both cases by purchase of stock, not involving consolidation. The plan was opposed by representatives of the Houston Chamber of Commerce and shippers at Waco, as well as of several short lines in the territory involved, on the ground that it would eliminate competition between the three lines, while representatives of other short lines objected to the applications as filed, on the ground that they do not make provision for the inclusion of connecting short lines, but indicated that the proposed "merger" itself would be a good thing if such provision were made.

The question of the disposition of the short lines in connection with proposals of this kind occupied a prominent place in the argument. Samuel W. Moore, general counsel of the Kansas City Southern, offered a suggestion for dealing with the short lines that had intervened in the case which he said represented the length to which the railroad felt it could go at this time. The suggestion was that the commission enter a reservation or condition to its order, holding the record open, so that any such short line might come in later to offer evidence that it had been prejudiced, and that the commission should then enter any order within its power, such as one allocating such line to the system, with the same force as if the condition had been entered at the time the order is issued. This led to a discussion as to what power the commission might have in any event to require a road to take over a short line. Mr. Moore said he thought it would have power to allocate a line and that if the road refused to comply with the condition it would lose its rights under the order. Commissioner Meyer asked if the Kansas City Southern would waive any right to attack the commission's jurisdiction in such a case, saying it has not been backward in the past in contesting the commission's

orders. In his final argument Mr. Moore took occasion to clarify his suggestion and said that the applicants are willing to agree that the short lines may have the benefit either of any power the commission may now possess or that it may be given by subsequent legislation and to agree that they will not hereafter contest such an order. He said, however, that he thought the solution of the short line question requires a proceeding in which all the lines are parties and in which the commission would allocate all the short lines to trunk lines so that the latter would know what their obligations are. For example the Kansas City Southern might say that the Fort Smith & Western should more properly be allocated to the Missouri Pacific than to it, but the Missouri Pacific is not a party to the present case.

In giving reasons for the proposed acquisitions of control Mr. Moore outlined the large systems being built up in the Southwest by the acquisition of lines by the Missouri Pacific, Southern Pacific, Santa Fe, Rock Island and Frisco, and to some extent by the Illinois Central, saying that the position of independent lines is being weakened by such strengthening of the other systems and that the combination now proposed is in an effort to meet the competition of the other systems. If it is approved and the Rock Island-Frisco merger is completed, he said, the work of grouping the principal lines of the Southwest will have been accomplished. He said that none of the security owners had objected to the plan except the minority stockholders of the St. Louis Southwestern represented by W. E. Meyer, and that although he had filed an intervening petition protesting that the plan would injure the minority stockholders he had kept adding to his holdings.

J. M. Bryson, general counsel of the Missouri-Kansas-Texas, outlined the contract by which the M.-K.-T. proposes to purchase from the Kansas City Southern the Cotton Belt stock which the latter acquired from the Rock Island, plus some more which it acquired in the market. It also proposes to buy additional stock in the market. The contract with the Kansas City Southern covers 155,000 shares, for which it is to pay a little over $13,000,000, of which it has already paid $7,000,000.

J. H. Tallichet, representing the Southern Pacific, spoke in favor of the approval of the application if provision is made for the preservation of a traffic agreement between the Southern Pacific and the Cotton Belt for an exchange of traffic between its Texas lines and St. Louis and Memphis.

Ben B. Cain, general counsel of the American Short Line Association, spoke in approval of the merger plan in general but criticized it because it did not include provisions for the short lines in the territory. If it is necessary for the three lines to be merged in order to enable them to compete with other big systems, he said, it is even more necessary that some provision should be made for the short and weak lines that would be similarly affected by the plan. He did not agree with the objections made by certain shippers on the ground that the plan would eliminate competition, saying he knew of no place of importance in the territory where there will not be competition between this system and some other system and that the competition of strong systems will be more effective than that of several weaker lines. After hearing Mr. Moore's final suggestion relating to a condition to the order affecting the short lines Mr. Cain asked leave to file a statement for the short lines.

Moultrie Hitt, appearing for the Texas Short Line and the Cape Girardeau Northern, asked that a condition precedent be attached to the commission's order requiring that the Texas line be included with the M.-K.-T., and said that the principal owner of the bonds of the Cape Girardeau Northern, Giboney Houck, is willing to acquiesce in the merger if the Cotton Belt will take over the Deering Southwestern and the St. Louis, Kennett & Southeastern, waiving his own interests, and leaving in the hands of the commission the question whether the general public interest demands that it be required to take over and rehabilitate the Cape Girardeau Northern.

R. C. Fulbright, representing the Houston Chamber of Commerce, opposed the plan, saying it would result in a monopoly of transportation throughout a large section of the Southwest, and G. H. Zimmerman, representing Waco shippers, said that he knew of no three railroads in the country that are in keener competition than the three involved in the applications. In reply to the argument that there would be competition between the proposed system and the Missouri Pacific he said that the latter serves a large part of the territory only indirectly.

P. A. Walker, counsel for the Oklahoma Corporation Commission, spoke in opposition to the applications but said he was voicing his own opinions, as his commission had taken no position in the matter.

R. C. Duff, president of the Waco, Beaumont, Trinity & Sabine, took the position that the Kansas City Southern on its own initiative has already acquired and taken control of the M.-K.-T., and Cotton Belt, in violation of the Sherman and Clayton anti-trust laws, and that the applicants are now asking the commission to approve "what the law says is a criminal conspiracy." Asserting that the commission is a part of the government machinery for the enforcement of the Clayton law, he said it is now the duty of the commission to proceed against the Kansas City Southern for divestiture of its control of the M.-K.-T., and that it cannot now render legal acts which when committed violated the law. "Under the precedent of this application," he said, "one giant corporation could take possession of all the railroads in the United States, put its own representatives on the boards of directors, reach down into their treasuries, as has been done in this case, and then determine for itself when it shall come before this commission for its sanction."

Mr. Moore denied that the Kansas City Southern had exercised actual control over the other two roads or that its purchase of stock in advance of asking authority to acquiring control was in violation of any law. He asserted that the prohibition of the Clayton law is not against the acquisition of control but against a conspiracy to stifle competition and that the transportation act contemplates that a road may acquire a substantial interest in the stock of another and then proceed with reasonable expedition to present its application to the commission for authority to acquire control. "We have to acquire enough stock to show our good faith and our ability to carry out what we propose," he said, adding that if the commission should decide against the application the roads would be required to cease and desist from holding the stock.

Winslow S. Pierce, chairman of the executive committee of the St. Louis Southwestern, asked permission to reply "as to a question of personal privilege," to charges that the "Loree interests" have dominated the affairs of the road to its prejudice. "Only three of its directors may be attributed to their selection," he said, "and personally I am not conscious of any action of the board which has been taken in subservience to any interest other than the best interests of the Cotton Belt itself." He said that many years ago he had advised Mr. Gould that the Cotton Belt was too small to stand by itself and also that the company had adopted its policy of conserving its surplus instead of paying it out in dividends many years ago. Since Mr. Meyer became a member of the board he said he has been "clamoring for dividends" but the policy was in no way due to the new interest in the company.

Training Understudies for Official Positions*

Cadet system proposed which will be open to promising young men from the ranks and college graduates

By William J. Cunningham
Professor of Transportation, Graduate School of Business Administration, Harvard University

THE principal purpose of this paper is to put forth a definite plan to meet a real need and to provoke a frank discussion both of the factors in the situation which call for a remedy and of the remedy itself. My general thesis may be summarized briefly:

(1) The problems of railroad administration today require a higher order of managerial talent than was required a generation ago.

(2) Railroading as a career is not now as attractive to ambitious and able young men as it was in the earlier periods.

(3) At this time, when the need is greater than ever before, the proportion of young men of exceptional ability and promise among railroad recruits is seriously diminishing and, except in a few cases, the railroads are not making adequate efforts to improve the calibre of the recruits.

(4) While there are several exceptions, the typical railroad is doing little to identify the pick of the young men in its service nor to afford the broad training so desirable for those who later may advance to positions of managerial responsibility.

(5) There should be a definite and comprehensive plan for selecting and training a group of understudies who would form the principal reservoir from which minor officials would be drawn.

(Professor Cunningham commented at considerable length on each of the above-mentioned factors and then described what he designated as a cadet system, which would attract and train promising young men for supervisory and official positions.—Editor.)

A Remedy Suggested

I now come to my definite proposal. For want of a better name I shall call it a cadet system. The essential elements in the plan, which differs in material respects from existing practice in the few cases where cadet or apprentice plans are in operation, are as follows:

1. The selection of a corps of young men for special training as personnel material for junior officials.

2. The corps to be divided equally into two groups: one selected from young men already in the service, and one recruited from the graduating classes of universities and technical schools.

3. A systematic program under which each man would be given practical experience in the several branches of the service.

4. Adequate supervision over the work of the cadets, educational guidance by a man broadly qualified for the task, periodical tests to determine capacity and progress, rigid adherence to high standards of performance and promise, and early elimination of those who do not keep up with such standards.

5. A promise, but not necessarily a guarantee, of permanent employment at the end of the training period, with the understanding that ordinarily the graduate cadets will be on a preferred standing in the selection of junior officials.

6. The door to be left open also for promotion of outstanding eligibles among candidates who are not graduate cadets.

7. Assignment of graduate cadets as staff assistants to executive, district or divisional officers for studies or other special or regular work until suitable openings occur in the ranks of junior officials.

8. The cost to be regarded frankly as an addition to operating expenses for the purpose of training official understudies.

Not Restricted to College Graduates

In any plan of this kind it would be unfortunate if the candidates were restricted to college graduates. Such a policy would antagonize the employees as a body, and would be resisted by the majority of officials. Within the ranks of any railroad there are many young men of great natural ability; men who were unable to go to college, but who have educated themselves in other ways and who have even greater known promise than the untried college graduate. Such men should be discovered and encouraged, and should be eligible for the cadet corps.

The number of cadets to be appointed each year should be based on a major fraction of the normal rate of turnover per year among junior officials. One-half of the corps should be selected on some sort of competitive basis from men nominated by department heads from candidates in the service. The other half should be selected from the graduating classes of universities. In that group, preference should be given to graduates who specialized in transportation or in civil or mechanical engineering, and it would be advisable also to go first to the universities or technical schools local to the railroad. This plan of dividing the corps equally between the younger employees, who had already shown ability and promise, and college-trained men would eliminate the criticism of class distinction, and, by encouraging healthy rivalry between the two groups, would bring out the best qualities in each group. Each would learn from the other and improve by the contact.

Qualifications of Director

It is hardly necessary to say that an undertaking of such importance would require intelligent supervision. The administration of the plan should be placed in charge of a man of special qualifications. He should be well informed in the broad aspects of railroad work, and should have a knowledge of detail in one or more departments. He should also have the attributes of a teacher. Obvi-

*Abstract of an address made at the February 18, 1927, meeting of the New York Railroad Club.

ously, he should understand young men and hold a sympathetic view toward the aspirations of youth. With these qualities should go the ability to maintain strict discipline.

The director's first task would be to formulate a program which would provide the desirable training, to determine the departments which should be embraced, and to decide upon the length of the period of training. In these matters there is likely to be a diversity of opinion. It might be wise to confine the training in the beginning to the operating, traffic, and accounting departments. By far the largest number of men would be required for the operating department, including maintenance of way and maintenance of equipment. The period of training for that major department might be made longer than for traffic and accounting, but the practical experience for one department should not be confined solely to that department. For example, the young man who is looking forward to permanent employment in the operating department should be given an opportunity to familiarize himself in the principles and some of the detail of accounting; a man who is in training for the accounting department should have a chance to visualize, at close range, the details of operation, maintenance, and traffic; and he who is destined to the traffic department should be made familiar with station, yard, and train operation, and the analysis of accounts and statistics.

Length of Training Period

Conceivably a training period of three or four years for operating-department cadets might be justified. Just how much time should be spent in each branch of the service, such as stations, yards, trains, engine-houses, shops, storehouses, track, structures, signals, office work, and selected features of accounting or other departments outside of operation, would be a matter of detail. The experience of railroads which now have or have had training courses, may be drawn upon, but it would be wise to give enough time to each subject so that the student would gain much more than a mere smattering of detail.

It would be the duty of the director to make sure that the young man would be getting the training and knowledge that the plan is intended to provide. To that end there should be a system of reports from those directly in charge of the cadets, and the director should conduct periodical examinations as well as require occasional written work which would indicate the cadet's powers of observation and the soundness of his judgment. High standards should be set for examinations and other written work, and the cadet who shows weakness in any essential respect should be dropped. It should be understood that the membership in the corps would require the continuous attainment of distinctly good grades in all tests and continuously favorable reports from the line officers under whom they would receive their service training. There should be a frank understanding with the cadets that there would likely be some elimination before the final year of training, and that only those who were fit would survive.

Places for Graduates

On appointment to the corps, the cadet should be told that, if he survives the rigors of the full period and is graduated from the course, he may hope to be numbered among those from whom selections are to be made when a vacancy occurs in a minor official position, and that, after appointment to such a position, his future progress would depend solely upon his ability and other qualities as the higher positions become vacant. Without making a definite commitment, he should be told that, if there is no vacancy for which he could qualify after graduation, he would be continued in service, subject of course to ordinary standards of conduct and application to work, with the salary of a graduate cadet, as a staff assistant to some officer in his department, and assigned to such special or regular work as might be available.

From personal experience I know that nearly every line officer could use one or more men to advantage in special investigations which the regularly employed force cannot find time to make. While it might appear to be a needless addition to pay-roll expense if any considerable number of graduate cadets were carried indefinitely while waiting for permanent openings, there need be no actual loss. In fact, the typical railroad is underofficered. The officers are given more to do than they can do well, and they are expected to supervise more activities than is possible physically for them to cover. The temporary assignment to his staff of one or more young men of special training, should enable such an officer to go into matters crowded out by other things of more immediate importance, and the value of such assistance should be much greater than the cost. Besides, the cadet would be getting additional training which should qualify him the better for the official position to which he aspires.

Compensation to Cadets

A plan of this kind should not be adopted without a frank recognition of the fact that it would mean substantial additional expense. The cadets, while working in the several branches of the service, should not take the place of those regularly employed. No attempt should be made to locate such men in permanently authorized pay-roll positions and thus provide the training without additional cost. Such a method would antagonize the labor unions and might jeopardize the success of the plan. The added expense should be accepted as the price of systematic training of future officials, with the belief that the present investment in an educational policy eventually will yield a high rate of return.

The cadets should be paid a reasonable salary. In view of the value of the training and their preferred status throughout, and subsequent to, their period of apprenticeship, they should be willing to accept a rate slightly less than might go with employment in regular positions and normal advancement in three or four years. Yet the rates should not be set so low as to deter the candidacy of men who have already been promoted in service to positions which carry salaries well above the average. The minimum for the first year should not be less than $1,500, plus special allowances for unusual expenses, and that rate might be advanced each year at the rate of $200, with a graduate rating of $2,400. The salary of the director should be sufficient to attract a qualified man of the right type. He should devote himself entirely to the supervision and training of the cadets, and he should be furnished with sufficient office assistance so that he might spend a substantial part of his time in personal contact with his men in the field.

Other Sources of Promotion Not Closed

While it should be understood that a cadet who would complete the course satisfactorily, and whose development during the training justified his selection for the corps, would be in a preferred class from which junior officials would be taken, it would not be wise to recruit all such officials from the ranks of graduate cadets. The door should not be closed against those who would be too far advanced in rank or were too old to be candidates for the employee quota for the cadet corps but who, under current practice, stood some chance of breaking out of the ranks into the official circle. Among these would

be dispatchers, yardmasters and assistant yardmasters, engine-house foremen, agents, chief clerks, secretaries, and others who in military organizations would be classified as non-commissioned officers. These men have already shown capacity. They aspire to commissions. They should be given consideration.

Here, as in the proportion of college and non-college men in the cadet corps, the fifty-fifty principle might be adopted—one graduate cadet to be appointed to an official position for each man promoted from the service to such a position. A strict adherence to a percentage basis would, of course, be impracticable, but the broad principle should be followed so that on the one hand the promise in the plan for creating a nucleus of specially trained understudies might be realized, and, on the other hand, the adoption of such a plan would not react unfavorably upon the rank-and-file. Such a balance would be particularly necessary during the first 10 years or more after the adoption of the cadet plan.

Cost of the Plan

The adoption and maintenance of the plan by a large railroad would entail substantial expense. The costs may be closely estimated but the net economic advantages cannot be stated in dollars and cents. The additional burden on the pay roll would depend upon the number of cadets, the length of the course, the scale of salaries and the organization of the director's staff. If in a given case the normal number of appointments annually to minor official positions were assumed to be 12, and that one-half were to be filled by graduate cadets, the yearly enrollment of cadets should be 6, plus an allowance for failure to adhere to high standards or withdrawals for other reasons. The maximum for the first-year class might be set at 9, for the second-year class at 8, for the third-year class at 7, and for the fourth-year class at 6. After the fourth year of operation the aggregate number of men in training would be 30, and their combined salaries and traveling expenses would be about $60,000 annually. Including the salaries and expenses of the director and his office assistants, the total cost would be about $75,000. That figure might be taken as the minimum total cost as a suitable organization and such systematic training would not be justified by a smaller number of cadets. If the plan contemplated a graduating class of 10, the total annual cost might be $120,000.

These figures are based on a four-year course. If three years were taken the cost would be from $55,000 for the smaller to $90,000 for the larger class.

Cost 0.1 Per Cent of Operating Expenses

These are large sums both as totals and when stated in cost per employee trained. Yet they are relatively small when stated in percentages of total operating expenses. In a typical case the cost would add less than 0.1 per cent to total expenses, but if, as I believe would be the case, the general calibre of the next generation of supervising and executive officers would be substantially improved, the returns would pay handsome dividends on the investment.

What is proposed here is not novel in fundamentals. Similar plans are effective on even more extensive scales in many of the largest and most progressive of our large industrial companies. They find that it pays. Moreover, my proposal merely amplifies, extends, and systematizes efforts of a similar nature, but on a much smaller scale, on several of the leading railroads.

While I stated earlier in this address that the cost of the plan should be regarded frankly as an addition to operating expenses, it is plain that the work to be done by the men in training will, in the main, be productive and a substantial part of their salaries will be earned by their day-to-day work even though the cadets do not take the place of regular employees. When a cadet is assigned, let us say, to a yard office, he may be in the way of the regular employees for a day or two but after that he will contribute to the general output and assist the regular force in doing more or better work. While in some cases the presence of a cadet may be resented by his local associates, the net general effect will be that of a helpful tonic to elevate the general standards of performance of all.

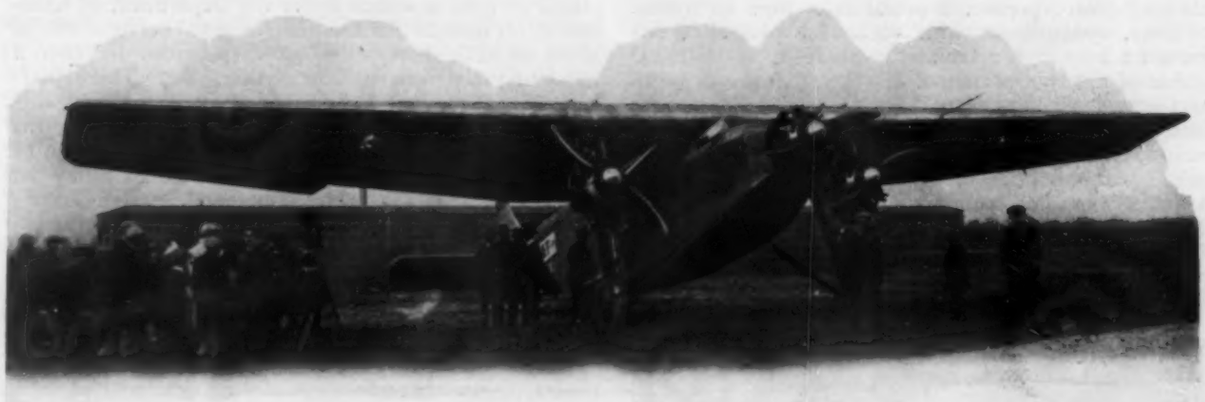
It must be realized also that even though the cost of training men by experience under the ordinary procedure is not specifically labelled as such, nevertheless the railroad company has invested a substantial sum in every man who has advanced to an official position. The company has paid for his mistakes and his pains of progress in routine work, and it continues to pay larger sums for his training by trial and error when he is in the position of directing the work of others. How much the company has invested in the typical trainmaster cannot be stated, but conceivably it may be little less than the $12,000 contemplated by this plan. In the first case the training has been narrow, unsystematic, and with little general supervision; in the second case it would be broad, systematic and intelligently directed. As between two men of equal natural ability and similar attitudes toward their work, the broader training should give the second man the advantage, and, from the viewpoint of the company, his promise as material for further promotion should be the greater.

Discussion

A lengthy discussion followed Professor Cunningham's address. While there was some criticism of certain details of his plan, it was generally admitted that the problem which he presented was one of extreme importance and that something must be done to provide an adequate supply of properly trained supervisors and officers. A number of railroads have maintained special apprenticeship courses for college trained men, in the mechanical department. It was brought out in the discussion, however, that other roads, the Delaware & Hudson, for instance, had what might be termed student courses, to prepare college trained men for supervisory positions in other departments.

Naturally the discussion was also extended to the much debated question of the use of college trained men by the railroads. Comparing this phase of the discussion with other debates on this question, would seem to indicate that the educators and the railroad officers are coming to have a better appreciation of each other's position and opinions, and that there is a strong tendency toward a spirit of co-operation, which promises to be mutually advantageous to the railroads and the college graduates.

Among those who took part in the discussion of the paper were J. C. Clark of Industrial Relations Counsellors, Inc., New York; Dean R. L. Sackett, school of engineering, Pennsylvania State College; J. G. Morgan, director of personnel, mechanical department, Delaware, Lackawanna & Western; Dr. Frank Haigh Dixon, department of economics and social institutions, Princeton University; W. W. Bates, assistant to general manager for personnel, Delaware & Hudson; Prof. Winthrop M. Daniels, Thomas DeWitt Cuyler Professor of Transportation, Yale University; J. A. Droege, general manager, New York, New Haven & Hartford; Samuel O. Dunn, editor, *Railway Age;* Prof. N. C. Miller, director, Industrial Extension Division, Rutgers University; and R. S. Binkerd, vice-chairman, Committee on Public Relations, Eastern Presidents' Conference.



All-Metal, Three-Engined Monoplane for Chicago-New York Air Mail Service

Air Transport Making Rapid Progress

Not exploited so much in this country as abroad, but favorable legislation and regulations are fostering its growth

By F. Desmond Sprague

THE fact that the United States is today on a parity with any other country in respect to transport aviation and will shortly be supreme in this field, will be a distinct surprise to many who are unacquainted with actual conditions. The new channel of commerce and communication now available gives every indication of becoming a serious contender for considerable mail, express and passenger business now being handled by the railroads. Competition for this quota will eventually be unavailing, but co-operation offers interesting possibilities.

The lack of appreciation of the American airplane as an economic factor may be attributed in part to the absence of proper advertising, the effect of foreign propaganda and to the rapidity of aeronautical development.

German-Built, Three-Engined, All-Metal, Ten-Passenger Monoplane in Service on the Paris-Rotterdam Route, Royal Dutch Air Lines

Since the days of the first airplane American flyers, both civil and military, have individually been the equals of any, and have to their credit many remarkable records, but this has meant little to the average man occupied with the exigencies of making a living or managing a business. Flying fields have been far from the cities and few planes are in evidence overhead. Press comments on American activities have been all too frequently limited to accounts of accidents and death to brilliant army and navy fliers, catastrophes such as the loss of the Shenandoah, or tales of some barnstorming machine collapsing in mid-air.

In contrast one heard continually, both from articles and returned travellers, of the great progress made by foreign countries in civil aviation in comparison with the assumed lack of corresponding activity in the United States.

Transport Conditions Abroad

That they have made great progress cannot be denied and the writer, going abroad last Spring, had ample opportunity to make a first-hand study of transport conditions.

Upon landing in Germany I found air travel to be a live and ever present thing and one that entered largely in the daily life of the various communities. If spectacular posters in railway stations, hotels and travel bureaus have been insufficient, surely the regular passage overhead of transport and passenger planes would awaken one's interest. In contrast to conditions in the larger American cities the German aviation fields are close in, the great Templehofer field in Berlin being in the center of the city and that at Munich only twenty minutes in a motor bus from the leading hotels. Consequently, planes are continually in evidence and as the strictest adherence to schedule is the rule, a man in the street has but to look up and can almost set his watch by the transit overhead of a particular liner.

Travel by Air Not Hazardous

Aerial time tables and rate booklets are published and freely distributed so that it is an easy matter for a prospective traveller or shipper to plan a short or extensive trip and to determine the schedule and fare. These book-

lets also give express and postal rates over all routes.

Safety, synonymous with successful operation, has reached a very high mark and compares most favorably to that of rail transportation. In fact, flying over regular German air lines is no longer considered an extra hazardous risk, so that standard life insurance policies remain valid. In addition, accident insurance is already included in the price of a ticket, while on American railroads it is sold separately.

From Germany I went to Paris and in France found the same keen interest in and wide advertising of the commercial air lines. A day spent by the visitor at LeBourget, the commercial air-port of Paris, will enable

Interior of Biplane Used on the Paris-London Route of the Imperial Airways

him to see the departure and arrival of through passenger and mail planes to London, Rotterdam, Cologne, Prague, Zurich and Marseilles. The Cologne route is of especial importance as here transshipment may be made to the German air liners bound for Berlin and Danzig and thence on to Moscow and central Siberia via the Russian government service. In addition to being an operating base for the regular liners, LeBourget is also a flying field for the French military service and a base for many civilian flying clubs and societies.

It was noted that the majority of the passengers on the continental routes were business men and women using the plane as a quick means of transportation. In fact, the writer noted a great decrease in first-class railroad travel over that of 1914, as most of those who could afford such accommodation would prefer to travel by air.

Dependent on Subsidies

But credible as such progress may seem, it must be remembered that the European airways are based in all cases on heavy government subsidies, and that oftentimes such subsidies are granted with an ulterior military motive or for purposes of colonial exploitation.

This is in marked contrast to conditions in the United States, where the air transport companies have had to stand on their own feet from the beginning. But such youthful hardships may in the end result to their ultimate advantage and place them in a more favorable position than the one oftentimes occupied by the railroads in which large indirect subsidies, such as land grants, mining concessions, etc., were later to be made the basis of almost intolerable regulative legislation.

Returning to this country late in the fall, I was agreeably surprised by the progress made. This advance has been largely due to the passage of the Air Commerce Act of 1926. This legislation, approved May 20, established a Federal policy with reference to aviation and placed its administration under the Department of Commerce. It insures that the same essential services will be given to navigation of the air as provided for over a hundred years in navigation of the water. The department is charged with the duty of registering eligible aircraft, certifying to their air worthiness, examining the operating personnel and air navigation facilities, also of establishing air traffic rules. It is authorized to lay out airways, provide for lighting, mapping, and emergency landing fields and in other directions furnishing assistance to aviators such as radio-direction fog-protection facilities, weather information, and other aids to navigation.

Progress in This Country

As a result of this Act, over fifteen mail and passenger contract routes have been established, primarily as feeders to the main government transcontinental air mail line and the scheduled mileage operated by regular air transport companies has grown more rapidly than that of the early railroads. By 1830, the locomotive had been under development for a longer time than had the airplane when the first air mail lines in the United States were started in 1918. There are now in this country over 7,000 miles of regularly operated air mail lines while by 1840 there were only 2,818 miles of railroad.

These contract lines have been most successful from an operating, if not financial, standpoint. Amongst the leaders may be mentioned those between

Chicago, Ill., via Moline, Ill., St. Joseph and Kansas City, Mo., Wichita, Kans., Oklahoma City, Okla., and Forth Worth, Texas, to Dallas and return.

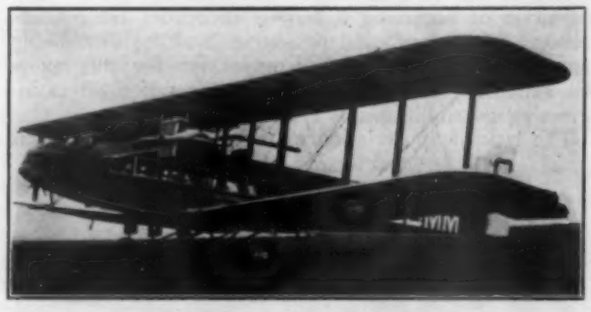
Salt Lake City, Utah, via Las Vegas, Nev., to Los Angeles, Calif., and return.

Elko, Nev., via Boise, Idaho, to Pasco, Wash., and return.

Seattle, Wash., via Portland and Medford, Ore., San Francisco, Fresno, and Bakersfield to Los Angeles and return.

Boston to New York, via Hartford, Conn., and return.

The Post Office Department is now considering a route down the Atlantic coast which, when placed in operation, will give



Twin-Engined, 15-Passenger Biplane Used on the Paris-London Route of the Imperial Airways

direct service between Boston, Mass., and the tip of the Florida peninsula.

Their flying records have been most creditable. As an indication of performance, figures of one of the leading companies are given herewith:

Miles flown from May 12 to November 1, 1926	343,000
Schedule mileage completed	99%
Completed mileage on time	92%
Number of forced landings due to mechanical failure of engine or plane	4
Number of miles per forced landing	85,000

During this time there was no mail lost, no accidents, nor any injury to personnel.

The above records were made with single engined planes. With the introduction of three motored ships, so powered that they may continue full load flight on any two of the three engines, still better performance is anticipated.

In addition, the government now has under consideration bids that were returned January 15, 1927, for the private operation of the present transcontinental air mail which has won great prestige by the regularity of its performance. In order that only well founded and responsible concerns should bid, the guarantees are made most severe. It was required that a proposal be accompanied by a twenty-five thousand dollar bond which would run concurrent with a subsequent performance bond of five hundred thousand dollars. An early decision is expected.

Prior to the taking over of the above line by the successful bidder, it is expected that night flying on this route will be greatly facilitated by the completion of a coast to coast chain of high powered marker beacons. These beacons will be of 1,500,000 candle power each and capable of throwing a beam for twenty-five miles. They are similar in their purpose and function to the range lights, gas buoys and other markers facilitating coastal navigation.

Express Shipments by Air

As a further indication of the rapid progress mention should be made of a contract effective April 1, 1927, the first of its kind, recently made with the American Railway Express Company for carrying of preferential shipments between New York and the southwest via Chicago.

Other factors tending to an early enlargement and stabilization of commercial air transport are the establishment of a uniform air mail postage rate and the passage of the new Air Regulations by the Department of Commerce. Heretofore utilization of the aerial post over branch feeder routes has been handicapped by a complicated and forbidding variable rate sheet. But the introduction of the new flat rate of ten cents per one-half ounce will remove this difficulty. In the opinion of competent authorities, establishment of the flat postage rate will tend to more than double the present volume of mail transported by air.

The Civil Air Regulations made effective December 31, 1926, as a result of provisions in the aforementioned Air Commerce Act establishes strict governmental supervision over all interstate air navigation. Under the general provision of these regulations, all planes used in interstate navigation must obtain certificates of air worthiness and all pilots who fly registered aircraft must obtain licenses, which licenses require periodic medical and flying examinations. Air traffic rules and the requisite signals are clearly defined and government inspectors are appointed to carry out the provisions above mentioned. Such regulations will do much to stabilize transport aviation and engender a feeling of confidence on the part of the general public.

How It Will Affect Railroads

It may thus be seen that the progress made during the past year has been sufficient to place commercial aviation in this country on a parity with that of Europe and that the broad gage legislation and regulations enacted have furnished an impetus that eventually will carry it far ahead.

Air mail and air express will shortly become an integral part of industry; their possibilities are large and their expansion inevitable, either independently or as feeders and extensions of other means of transportation.

As the railroads have found it necessary to adjust themselves to the competition of the motor bus, so will they in the near future find it necessary to accommodate themselves to the airplane. However, this may be to their ultimate mutual advantage and the proper tying together of these three forms of transportation offers unlimited opportunity for executive ability.

THE SOUTHERN PACIFIC COMPANY calculates that the baggage checked over its lines in the year 1926 weighed an aggregate of 162,191,390 pounds, and the average weight per piece was only 85 pounds. This average is said to be decidedly less than the average weight 10 years ago, a change which is attributed to the shorter skirts worn nowadays, by women, to the lighter weight of women's garments and to the perfection of accommodations on modern trains and at the best hotels which make it less necessary than formerly to carry a variety of clothing. The 81,000 tons of baggage was valued by its owners at $139,293,782, or something under one dollar a pound.

Type of Curtis Biplane Used by the National Air Transport Between Chicago and Dallas, Texas, on the Air Mail Line

Valuation Order Not Enjoinable

Supreme court holds I.C.C. report merely record of conclusions until applied

WASHINGTON, D. C.

HOPES that the Supreme Court of the United States would settle some of the much-controverted questions as to the validity of the Interstate Commerce Commission's valuation methods by its decision in the Los Angeles & Salt Lake valuation case were disappointed on February 21. Instead of reviewing the commission's work the court by a unanimous decision reversed the decision of the district court for the southern district of California, which had annulled and enjoined the use of the commission's final valuation, on jurisdictional grounds, holding that while the commission's conclusions, if found erroneous in law when it comes to apply them may be disregarded, "neither its utterances, nor its processes of reasoning, as distinguished from its acts, are a subject for injunction."

As to the assertions made by the railroad that the commission's order is invalid because it is in excess of the powers conferred upon the commission by the valuation act and erroneous in many particulars, the court said that "whether all or any of the claims and charges made in the bill are well founded, we have no occasion to consider; for we are of opinion that the district court should have sustained the motion to dismiss the bill."

The point seems to be that the commission's valuation order is not an "act." Although counsel for the railroad contended that irreparable injury is threatened by the order, the court says in effect that it has not been injured so long as the order is not actually used; that the "so-called order" is "one which does not command the carrier to do or refrain from doing anything," but is "merely the formal record of conclusions reached;" "solely an exercise of the function of investigation," and merely preparation for possible action in some proceeding which may be instituted in the future."

Apparently the effect of the decision is to permit the commission to continue making its valuations in the way it has been making them and to prevent carriers from taking them into court until after the commission or some other body uses a valuation order as evidence on which to base an action against a carrier in a ratemaking or other case, such as a recapture case. If the commission should adopt anything like the proposed report of its Bureau of Valuation in the St. Louis & O'Fallon case, in which incomplete valuation data were used as the basis for estimating a "valuation for recapture purposes," another opportunity might be presented for a court test, although the decision in this case contains a statement that "data collected by the commission as an exercise of its function of investigation constitute ordinarily evidence sufficient to support an order, if the data are duly made part of the record in the case in which the order is entered." The recapture case was argued before the commission last July, but it was later re-opened for the consideration of additional evidence, and there has been no decision by the commission on it.

Los Angeles & Salt Lake Claimed Valuation of $70,000,000

The commission's final valuation report in this case was dated June 7, 1923. It stated a final value for rate-making purposes of $45,000,000 as of June 30, 1914, but in a supplemental report on October 17, 1925, it added $200,000. The company had claimed a value of at least $70,000,000. Suit to enjoin and set aside the order, which was the first one issued by the commission stating a "final value," was instituted in the district court, which on December 7, 1925, rendered its decision, enjoining its enforcement, on the ground that the commission had no authority in law to find a "value for rate-making purposes" as distinguished from "true value," and that the commission's figure was too low. The case was appealed to the Supreme Court, which heard argument on January 3 and 4.

Counsel for the railroad in their brief urged the court to take advantage of the opportunity to make a comprehensive review of all the numerous grounds of invalidity urged against the commission's order, stating that public interest would be served thereby and that the extent to which there must be further litigation in valuation cases will be largely determined by the scope of the decision in the present case. Chief Counsel Farrell of the commission devoted a large part of his argument to the question of jurisdiction, contending that the commission's orders should not be interfered with in their present stage and that the time for the carriers to contest them will be when an attempt is made to apply a valuation in a rate or other case depending upon value. The railroad counsel, on the other hand, contended that the commission has been using its valuation data at least indirectly in many ways and that the road was being injured by the very existence of the valuation order.

Justice Butler, who was formerly counsel for the railroad valuation committee, took no part in the consideration or disposition of this case. The opinion of the court was rendered by Justice Brandeis. The full text follows:

Full Text of the Decision

This suit was brought in the federal court of southern California by the Los Angeles & Salt Lake Railroad Company to enjoin and annul an order of the Interstate Commerce Commission purporting to determine the "final value" of its property, under what is now Sec. 19a of the Act to Regulate Commerce, February 4, 1887, c. 104, 24 Stat. 379, as amended by the Valuation Act, March 1, 1913, c. 92, 37 Stat. 701, by the Act of February 28, 1920, c. 91, Sec. 433, 41 Stat., 456, 474, 493, and by the Act of June 7, 1922, c. 210, 42 Stat. 624. *San Pedro, Los Angeles and Salt Lake Railroad Co.*, 75 I. C. C. 463; 97 I. C. C. 737; 103 I. C. C. 398. The bill asserts that the order fixing the final value is invalid, because it is in excess of the powers conferred upon the commission, is contrary to the provisions of the Valuation Act, and violates the Fifth Amendment. It asserts also that irreparable injury is threatened.

Reasons why the final valuation is invalid are set forth specifically in 31 paragraphs and 35 sub-paragraphs of the bill. It charges that the commission adopted rules for the valuation which are unsound and unwarranted in law; that in the determination of values it ignored facts and factors of major importance; that it refused to report an analysis of the methods employed by it, although required so to do by the Valuation Act; and that it refused to comply with the requirement that all values and elements of value be separately reported. It charges that the valuation was made as of June 30, 1914, whereas it should have been made as of June 7, 1923; that the value found is that for rate-making purposes, whereas the finding should have been a general one of value for all purposes; that properties enumerated were erroneously excluded from the valuation; that in making the finding of value the commission erroneously failed to consider nine specified elements of value; that in making the finding of investment in road and equipment it ignored six items; that in making the finding of cost of reproduction new it ignored eleven items; that in making the finding

of cost of reproduction new less depreciation it made thirteen errors; that in valuing the lands eleven errors were made; and that in making the finding as to working capital a large sum was arbitrarily deducted. It alleges that for these and other reasons the findings made are incomplete, erroneous in law and misleading in point of fact.

The jurisdiction of the District Court was invoked under the Urgent Deficiencies Act, October 22, 1913, c. 32, 38 Stat. 208, 219, and also under its general equity powers. The United States was named as defendant and the commission became such by intervention. Both defendants answered. But by appropriate pleadings the United States objected that the adoption by the commission of the final valuation does not constitute an order within the meaning of the Urgent Deficiencies Act; challenged also the jurisdiction of the court to enjoin or annul the order under its general equity powers; and moved that the bill be dismissed. The motion was overruled; the case was heard on the pleadings and evidence; and, after proceedings which it is not necessary to detail, a decree was entered which annulled the final valuation and enjoined its use for any purpose. *Los Angeles & Salt Lake Railroad v. United States*, 4 F. (2d) 736; 8 F. (2d) 747. Whether all or any of the claims and charges made in the bill are well founded, we have no occasion to consider; for we are of opinion that the District Court should have sustained the motion to dismiss the bill.

All Orders Not Reviewable

The final report on value, like the tentative report, is called an order. But there are many orders of the commission which are not judicially reviewable under the provision now incorporated in the Urgent Deficiencies Act. See *Procter & Gamble Co. v. United States*, 225 U. S. 282; *Hooker v. Knapp*, 225 U. S. 302; *Lehigh Valley R. R. Co. v. United States*, 243 U. S. 412; *United States v. Illinois Central R. R. Co.* 244 U. S. 82, 89; *Delaware & Hudson Co. v. United States*, 266 U. S. 438. For the first nineteen years of the commission's existence no order was so reviewable. The statutory jurisdiction to enjoin and set aside an order was granted in 1906, because then, for the first time, the rate-making power was conferred upon the commission, and then disobedience of its orders was first made punishable. Hepburn Act, June 29, 1906, c. 3591, Sections 2-7, 34 Stat. 584, 586-595. The first suit to set aside an order was brought soon after. *Stickney v. Interstate Commerce Commission*, 164, Fed. 638; 215 U. S. 98. The jurisdiction conferred by the Hepburn Act was transferred, substantially unchanged, to the Commerce Court, by the Act of June 18, 1910, c. 309, Sec. 1, 36 Stat. 539; and, when that court was abolished, to the district courts, by the Urgent Deficiencies Act. The so-called order here assailed differs essentially from all those held by this Court to be subject to judicial review under any of those Acts. Each of the orders so reviewed was an exercise either of the quasi-judicial function of determining controversies or of the delegated legislative function of rate making and rule making.

Order Merely a Formal Record of Conclusions

The so-called order here complained of is one which does not command the carrier to do, or to refrain from doing, any thing; which does not grant or withhold any authority, privilege or license; which does not extend or abridge any power or facility; which does not subject the carrier to any liability, civil or criminal; which does not change the carrier's existing or future status or condition; which does not determine any right or obligation. This so-called order is merely the formal record of conclusions reached after a study of data collected in the course of extensive research conducted by the commission, through its employees. It is the exercise solely of the function of investigation. Compare *Smith v. Interstate Commerce Commission*, 245 U. S. 33. Moreover, the investigation made was not a step in a pending proceeding in which an order of the character of those held to be judicially reviewable could be entered later. It was merely preparation for possible action in some proceeding which may be instituted in the future—preparation deemed by Congress necesasry to enable the commission to perform adequately its duties, if and when occasion for action shall arise. The final report may, of course, become a basis for action by the commission, as it may become a basis for action by Congress or by the legislature or an administrative board of a state. But so may any report of an investigation, whether made by a committee of Congress or by the commission pursuant to a resolution of Congress or of either branch thereof.

The Valuation Act requires that the investigation and study be made of the properties of each of the rail carriers. There are about 1,800. 40 Annual Report Interstate Commerce Commission, 13. In directing the commission to investigate the value of the property of the several carriers, Congress prescribed in detail the subjects on which findings should be made, and constituted the "final valuations" and "the classification thereof" *prima facie* evidence, in controversies under the Act to Regulate Commerce. Every party in interest is, therefore, entitled to have and to use this evidence; and the carrier, being a party in interest, has the remedy by mandamus to compel the commission to make a finding on each of the subjects specifically prescribed. *Kansas City Southern Ry. Co. v. Interstate Commerce Commission*, 252 U. S. 178. But Congress did not confer upon the courts power either to direct what this "tribunal appointed by law and informed by experience," *Illinois Central Ry. Co. v. Interstate Commerce Commission*, 206 U. S. 441, 454, shall find, or to annul the report, because of errors committed in making it. Moreover, errors may be made in the final valuation of the property of each of the nearly 1,800 carriers. And it is at least possible that no proceedings will ever be instituted, either before the Commission or a court, in which the matters now complained of will be involved or in which the errors alleged will be of legal significance.

The mere fact that Congress has, in terms, made "all final valuations . . . and the classification thereof . . . *prima facie* evidence of the value of the property in all proceedings under the Act to Regulate Commerce . . . in all judicial proceedings for the enforcement of the Act . . . and in all judicial proceedings brought to enjoin, set aside, annul, or suspend, in whole or in part, any order of the Interstate Commerce Commission" is, obviously, not a violation of the due process clause justifying proceedings to annul the order. That to make the commission's conclusions *prima facie* evidence in judicial proceedings is not a denial of due process, was settled by *Meeker v. Lehigh Valley R. R. Co.*, 236 U. S. 412, 430, 431. It was there said of a like provision relating to reparation orders: "This provision only establishes a rebuttable presumption. It cuts off no defense, interposes no obstacle to a full contestation of all the issues, and takes no question of fact from either court or jury. At most, therefore, it is merely a rule of evidence." See also *Mills v. Lehigh Valley R. R. Co.*, 238 U. S. 473, 481-482; *St. Louis Southwestern Ry. Co. v. United States*, 264 U. S. 64, 77.

Nor does the fact that "all final valuations . . . and the classifications thereof" are made *prima facie* evidence prevent the report from being solely an exercise of the function of investigation. Data collected by the commission as a part of its function of investigation, constitute ordinarily evidence sufficient to support an order, if the data are duly made part of the record in the case in which the order is entered. See *Interstate Commerce Commission v. Louisville & Nashville R. R. Co.*, 227 U. S. 88, 93; *Chicago Junction Case*, 264 U. S. 258, 262; *United States v. Abilene & Southern Ry. Co.*, 265 U. S. 274, 286-290; Act of June 18, 1910, c. 309, Sec. 13, 36 Stat. 539, 555. Inquests and inquisitions, if they were expressly authorized, are, at common law, admissible in evidence in judicial proceedings, thus constituting an exception to both the hearsay rule and the rule against opinion evidence. 3 Wigmore on Evidence (2d Ed.), Secs. 1671-1674. Some inquests are at common law also *prima facie* evidence of the facts found. *Hughes v. Jones*, 116 N. Y. 67.

Carriers Have Remedies Against Errors

Congress has provided adequate remedies for the correction of errors in the final valuation and the classification thereof. The conclusions reached by the commission must be submitted first in the form of a tentative report, Sec. 19a, pars. (f) and (h). When so submitted, the carrier is authorized to file a protest and to be heard thereon, par. (i). If such protest is filed, the commission is directed to make in the report such changes, if any, as it may deem proper. Even if no protest is filed, the commission may of its own motion upon due notice to parties in interest correct the tentative report. Compare *New York, Ontario & Western Ry. Co.* v. *United States*, decided January 10, 1927. When the final report is introduced in evidence the opportunity to contest the correctness of the findings therein made is fully preserved to the carrier; and any error therein may be corrected at the trial. Specific findings may be excluded because of errors committed in making them. It is conceivable that errors of law may have been committed which are so fundamental and far-reaching, as to deprive the "final valuations . . . and the classification thereof" of all probative force. Moreover, additional evidence may be introduced. Paragraph (j) provides that "if upon the trial of any action involving a final value fixed by the commission, evidence shall be introduced regarding such value which is found by the court to be different from that offered upon the hearing before the commission, or additional thereto and substantially affecting the value," the proceedings shall be stayed so as to permit the commission to consider the same and fix a final value different from that fixed in the first instance, and to "alter, modify, amend or rescind any order which it has made involving such final value."

The District Court rested jurisdiction to entertain a suit to set aside the valuation order largely upon the provisions of paragraph (j), believing that such a suit was within the scope of the words "upon the trial of any action involving a final

value." That paragraph was intended to apply to actions brought to set aside rate-fixing orders in which the question of the value of the carrier's property would be material. In our opinion, it is not applicable to so-called orders fixing only valuations. The objection to entertaining this suit to annul the final valuation is not merely that the question presented is moot, as in *United States* v. *Alaska Steamship Co.*, 253 U. S. 113, 116; or that the plaintiff's interest is remote and speculative as in *Hines Yellow Pine Trustees* v. *United States*, 263 U. S. 143, 148. There is the fundamental infirmity that the mere existence of error in the final valuation is not a wrong for which Congress provides a remedy under the Urgent Deficiencies Act.

Little need be added concerning the further contention that the suit should be entertained under the general equity power of the court. Two arguments are urged in support of the proposition. One is that since the commission has by reason of errors of law and of judgment grossly undervalued the property, its report will, unless suppressed, injure the credit of the carrier with the public. The other is that the commission may itself be misled into illegal action by the erroneous conclusions and may apply them to the carriers' injury, since use of the final valuation is required in making rates pursuant to Sec. 15a of the Act to Regulate Commerce, as amended by Transportation Act, c. 91, Sec. 421, 41 Stat. 456; in prescribing divisions of joint rates under Sec. 15; in determining the limit upon the amount of capitalization, in the event of a consolidation under Sec. 5; in determining the propriety of an issue of securities, under Sec. 20a; or as the basis of computation of the amount of excess earnings to be recaptured under Sec. 15a. Neither argument is persuasive. The first reminds of the effort made in *Pennsylvania R. R. Co.* v. *United States Railroad Labor Board*, 261 U. S. 72, to suppress the report of that board. The second reminds of the attempt to secure a declaratory judgment in *Liberty Warehouse Co.* v. *Grannis*, decided January 3, 1927; and, also, of cases in which it was sought to enjoin a municipality from passing an illegal ordinance. Compare *New Orleans Waterworks Co.* v. *New Orleans*, 164 U. S. 471, 481; *McChord* v. *Louisville & N. Ry. Co.*, 183 U. S. 483.

No basis is laid for relief under the general equity powers. The investigation was undertaken in aid of the legislative purpose of regulation. In conducting the investigation, and in making the report, the commission performed a service specifically delegated and prescribed by Congress. Its conclusions, if erroneous in law, may be disregarded. But neither its utterances, nor its processes of reasoning, as distinguished from its acts, are a subject for injunction. Whether the remedy conferred by the Urgent Deficiencies Act is in all cases the exclusive equitable remedy, we need not determine.

Reversed.

Mr. Justice Butler took no part in the consideration or decision of this case.

Two Sets of Prices Used in Valuation

WASHINGTON, D. C.

A BRIEF filed with the Interstate Commerce Commission in the valuation case of the Port Huron & Detroit, Valuation Docket 801, by Moultrie Hitt and Clarence A. Miller, attorneys for that line, is of unusual interest in that it deals with what is said to be the first instance in which the commission has made the specific statement that effect was being given to prices prevailing on date of valuation when such date of valuation purports to be as of any time subsequent to June 30, 1914.

The brief says that the commission has reported two single sum final values, one at 1914 prices and the other at 1919 prices. That is pointed to in the following language:

"*The Alleged Tentative Final Valuation:* Was issued under date of April 30, 1926, and required the carrier to file its protest on or before thirty days from May 26, 1926. This tentative valuation appears to be novel in that it reports two definite figures of final valuation, one of $226,129 at 1914 prices and the other of $281,129 by giving consideration to the prices prevailing as of valuation date, June 30, 1919, so far as the incomplete records of the Construction Company show the cost to the contractor in the actual building of the road in 1917, 1918 and 1919."

The brief also points out as an inconsistency that the tentative final valuation purports to declare a value as of June 30, 1919, although prices as of June 30, 1914, are applied to cost of reproduction in arriving at the final valuation.

The order attached to the tentative valuation reads, in part, as follows:

"It is ordered, that said report be, and it is hereby declared to be, the tentative valuation as of June 30, 1919, of the property of the Port Huron & Detroit Railroad Company."

On page 2 of the tentative valuation, however, there appears the following paragraph:

"The estimates of cost of reproduction covered by this report are based upon what is referred to herein as the 1914 level of prices, while the present values of the common-carrier lands covered by the report are based upon the fair average of the normal market value of lands adjoining and adjacent to the rights of way, yards and terminals of the carrier, as of valuation date. This discrepancy will be removed when we adjust to later dates. in accordance with the requirements of the Valuation Act, the final values herein reported."

As to this the brief says:

"There is manifest conflict between this last quoted paragraph and the order itself. This paragraph admits that the values stated are not all as of valuation date, while the order adopts all of them as the values of valuation date. In arbitrarily adopting values as referred to valuation date when those values are expressly declared not to refer to valuation date, it would seem obvious that the Tentative Valuation is self-destructive.

"The Tentative Valuation reported that the original cost to date of all common carrier property of the Port Huron & Detroit could not be definitely ascertained, as the necessary records were not obtainable, and only gave credit in reporting original cost for such items as its field accountants could pick out from a cash book of the construction company and definitely assign to the Port Huron & Detroit. Yet the Tentative Valuation reported a single sum for final value of $281,129 which purports to give effect to prices prevailing on date of valuation. The amount so reported is so much less than it should be to properly reflect the difference in price levels in 1919 as compared with the single sum for final value, also reported for 1914 of $226,129, that it is obvious that full effect was not given to increased prices for all items of property but was probably confined to only that portion of the carrier's property for which the field examiners could find only a partial and admittedly incomplete record of *cost to the contractor.*"

Cost to Contractor, or Carrier?

Whether the original cost is the cost to the contractor to create the property or is the cost to the carrier to acquire its property also is discussed in the brief. The carrier contracted in 1917 to pay $450,000 for the completed property, but the commission's inventory was taken before the work was finished in 1919, and in the meantime the price level was rising and the contractor went into bankruptcy. The carrier's proof went to show that the contractors were mixed up in other enterprises and kept books so loosely that although the commission on its first examination could only identify items to the amount of $298,840, the carrier was able to furnish proof of additional items which the Bureau of Valuation accepted that raised the identified items to $353,456.18. The carrier also claims other items which would raise the total cost to the contractor to $514,122.45, or $103,576.45 more than the contract price to the carrier. This situation differs from the usual one where the cost to the carrier is usually in excess of the cost to the contractor to create the property.

The carrier had as its chief witness Professor Henry E. Riggs, of the University of Michigan, whose testimony was that the cost of reproduction new of this carrier at 1919 prices was $687,881, exclusive of general contingencies, working capital, and materials and supplies, or anything for development cost or going concern value or other intangibles, as contrasted with a corresponding Bureau total of $515,303.90.

Maximum Space Utilization in Business Car

Other features of M. N. & S. car include highly attractive interior finish and equipment

THE Pheasant, official railroad car just completed for Harry E. Pence, president of the Minneapolis, Northfield & Southern, was built in the Jackson street, St. Paul, shops of the Great Northern under the direction of W. R. Wood, mechanical engineer, and completed in the Glenwood shops of the Minneapolis, Northfield & Southern by Wm. French & Company, decorators, Minneapolis, Minn. Variations from standard railroad practice were made after designs by Mr. Pence to secure economy in the use of space as well as unusually beautiful interior finish and furniture equipment.

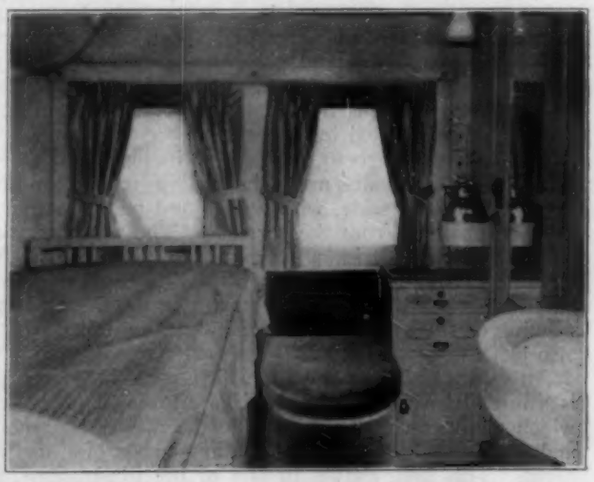
The car is 84 ft. 6¼ in. over the buffers and weighs 190,000 lb. equipped. The steel underframe, made by the Siems-Stembel Company, St. Paul, Minn., weighs 31,500 lb., and is supported on six-wheel standard high-

The Lounge Room

equalizer trucks, equipped with clasp brakes manufactured by the Commonwealth Steel Company, St. Louis, Mo. The car and running gear is painted in Duco, standard Great Northern green, with light green letter boards. The interior is finished in Duco jade green in the observation end, the dining room being decorated with a Chinese pheasant design. The ceilings and the stateroom walls are stippled.

The car is self sufficient as to light, heat and air. When away from terminals, the batteries are charged by a gas engine generator unit provided in a storage space beneath the car, and heat is furnished by a Baker railroad heater, operating with a low-grade distillate. During operation in trains, the car is heated by equipment furnished by the Vapor Car Heating Company, Inc., Chicago, which affords independent heat regulation for each room. All heating pipes in the car are concealed by steel grills. Telephone jacks are provided; also a complete radio outfit.

The two 300-ampere-hour Edison storage batteries are normally charged from an axle generator. Much of the electrical equipment was designed by the owner, including a 10-circuit switchboard with meters showing charge



Each Stateroom Is Beautifully Finished and Equipped

and discharge voltage, and ampere-hour readings of each battery, separately.

A large water tank underneath the car, two over the kitchen, and two over the pantry, have a total capacity of 600 gal. An air compressor under the car, driven by an engine also burning a low grade distillate fuel, operates

Left—Telescoping Crew's Bed; Right—The Cabinet Contains a Writing Table and Switchboard

to raise water from the under tank when the car is set out.

The kitchen is 7 ft. 8 in. long and equipped with the necessary range, sink, work table, lockers and refrigerator, cooled by a Frigidaire unit situated in a box under the car and operated from the storage batteries. The range, constructed by the Copper Clad Malleable Range Company, St. Louis, Mo., is insulated with layers of

steel, copper and asbestos and dead space air. It has six cooking holes and is fitted with a burner made by the Day Oil Burner Company, Minneapolis, Minn. Under the range is a large storage space for utensils and over it a large exhaust fan.

The pantry, which is located next to the kitchen, has hot and cold water, with a cooling unit under the serving table and steel lockers above. It is also equipped with a 13-in. by 11-in. sink, 8 in. deep. Between the pantry and the dining room is the crew's room, which occupies 6 ft. 3 in. in length, and is equipped with an upper and lower berth, hopper, wash stand, cabinet with mirror in the door, and necessary linen supply and clothes lockers.

The dining room is 12 ft. long, being provided with a solid walnut draw-top table which may be arranged to seat four to eight persons. The sideboard is furnished with a silver tea set and dishes of Whieldon ware, bearing the pheasant design. The jade green walls in the dining room are decorated with free hand drawings of a conventional Chinese tree and pheasant design. A folding writing desk and 10-circuit switch board are located in an inconspicuous cupboard in one corner of the room. A paddle fan is installed in the ceiling.

The master stateroom, which is 7 ft. long, and three 6-ft. 2-in. staterooms are arranged in pairs along a corridor 24½ in. wide, with a bath and public lavatory between opening from the corridor. The master stateroom is equipped with a Duco-finished iron bed, 4 ft. wide, with standard upper berth, a dressing table and clothes locker with full length mirror in the 24-in. door, opening on the corridor. It is adjacent to a toilet, which also has a door opening into the next stateroom.

An example of the way in which space is conserved is afforded by the provision of an additional crew bed which telescopes under the bed in the master stateroom and can be pulled out into the dining room for use at night. This bed, shown in one of the illustrations, is equipped with piano springs, mattress and curtains.

Each of the staterooms, other than the master stateroom, is equipped with a Duco-finished iron bed, 3 ft. wide, with standard upper berth and dressing table, clothes locker, wash basin, cabinet with mirror in the door, enclosed hopper and a full length mirror in a 22-in. door opening on the corridor. The public lavatory is equipped with the usual wash basin and cabinet, hopper, and shower with a steel porcelain-lined tub, 36 in. by 30 in. by 18 in.

The lounge or observation room takes up the remaining 11 ft. 6¾ in. of the car space, and, as shown in the illustration, is decorated with the Chinese tree and pheasant design in harmony with the decoration of the dining room. The furniture is of English type, solid walnut, upholstered in mohair. An odd chair put in for variety has a wool tapestry motif embroidered on the back rest. Attractive heavy bronze lighting fixtures, made by the Safety Car Heating & Lighting Company, New York, are used, differing in each compartment. Those in the dining room are of the candalabrum type, with parchment shades which are decorated with the pheasant design.

The observation room is equipped with a lounge, the back of which may be raised to form an upper berth, and the addition of these two berths provides sleeping accommodations for a total of 13 persons. This room also has three folding tables and ceiling paddle fan, air pressure, and altitude gages, a ship bell clock and a combination inside and outside thermometer. As a safety feature, a fourth step is provided at the observation end of the car. This step lets down almost to the platform and locks automatically when thrown up by means of a self-balancing pawl.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended February 12 amounted to 968,317 cars, an increase of 50,962 cars as compared with the corresponding week of last year and an increase of 64,382 cars as compared with 1925. Although the increase was mainly due to heavy coal loading, the increase in coal, as compared with last year, 46,868 cars, was less than the total increase, as considerable gains were also reported in the loading of merchandise and miscellaneous freight. Decreases were reported in grain and grain products, livestock, coke and forest products. Decreases as compared with last year were reported by the Northwestern and Southwestern districts, but the other districts showed increases as compared with both 1926 and 1925.

The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading—Week Ended Saturday, February 12, 1927

Districts	1927	1926	1925
Eastern	226,786	201,609	214,439
Allegheny	196,967	183,556	185,186
Pocahontas	60,326	55,954	44,508
Southern	159,355	155,530	147,212
Northwestern	113,548	116,381	113,496
Central Western	137,006	129,083	132,974
Southwestern	74,329	75,512	66,120
Total Western districts	324,883	320,976	312,590
Total all roads	968,317	917,625	903,935
Commodities			
Grain and grain products	42,664	43,658	41,421
Live stock	28,145	29,769	30,501
Coal	218,777	171,909	171,099
Coke	12,460	18,883	13,318
Forest products	71,027	76,148	79,557
Ore	11,091	10,023	11,062
Mdse. L.C.L.	257,816	247,844	248,178
Miscellaneous	326,337	319,391	308,799
February 12	968,317	917,625	903,935
February 5	970,892	914,491	929,130
January 29	950,969	925,696	897,368
January 22	942,587	921,643	924,291
January 15	950,045	931,735	934,022
Cumulative total, 7 weeks	6,463,958	6,260,372	6,290,014

The freight car surplus for the period February 1 to 7 averaged 257,767 cars, including 143,652 box cars and 64,718 coal cars. The Canadian roads for the same period had a surplus of 21,565 cars, including 18,250 box cars and 250 coal cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 12 showed an increase of 1,890 cars over the previous week and an increase of 5,016 cars over the same week last year.

	Total for Canada			Cumulative Totals to Date	
Commodities	Feb. 12 1927	Feb. 5, 1927	Feb. 13, 1926	1927	1926
Grain and grain products	8,290	7,630	6,670	54,077	47,743
Live stock	1,913	1,903	1,849	12,638	12,364
Coal	6,276	6,464	5,352	40,865	32,908
Coke	388	435	843	2,412	3,071
Lumber	3,178	3,020	3,012	16,601	17,331
Pulpwood	6,483	5,900	4,606	31,181	24,019
Pulp and paper	2,358	2,163	2,742	13,273	16,101
Other forest products	3,774	3,484	4,057	19,313	20,784
Ore	1,497	1,397	1,521	8,014	8,540
Merchandise, L. C. L.	15,700	15,663	14,534	91,701	84,919
Miscellaneous	11,497	11,405	11,152	64,601	61,999
Total cars loaded	61,354	59,464	56,338	354,676	329,779
Total cars received from connections	40,538	37,950	36,049	216,572	207,470

The New Northern Railway System*

Great Northern executive explains benefits expected to accrue from merger with Northern Pacific

By Ralph Budd
President, Great Northern

TWENTY-FIVE years ago James J. Hill proposed to consolidate the stock ownership of the Great Northern, Northern Pacific, and Burlington railways. The courts then held that such control was prohibited because the anti-trust act of 1890 was construed to mean that there could be no consolidation of railroads where there was substantial competition.

On the other hand, the transportation act has provided for acquisition of control of one carrier by another through stock ownership and lease without complete consolidation, and the Interstate Commerce Commission has sanctioned extensive unifications by stock control and lease. This is what is now proposed by the two Northern Companies, and such unification can only be lawful and effective if the commission finds it to be in the public interest.

Lessee to be Operating Railway.—The proposal is that in addition to controlling them through stock ownership the new company will lease from the Northern Companies their entire properties and operate them as a single carrier, which, it is contemplated, will also directly operate the Spokane, Portland & Seattle Railway, a property already jointly controlled through the ownership of all of its stock.

The operation of the Burlington, which is also controlled by the Northern Companies through equal ownership of over 97 per cent of the stock, will remain separate as at present. But the vesting in a single control of the entire 97 per cent of the Burlington stock, now owned separately and in equal shares by the Northern Companies, will better unify the direction of the Burlington and will be favorable to the more decisive handling of its development policies than has been practicable when each Northern Company voted separately and independently its half of the Burlington stock.

Proposed Plan Already Partly Accomplished

Northern Lines now tied together by common undertakings.—The unification which is now proposed is not to be viewed as an original and independent move which has never been started, and which, therefore, need not now be undertaken at all. The fact is that over 25 years ago the two Northern Companies took an extremely important step in this direction by acquiring control of the Burlington through purchase of a large majority of the Burlington stock. They are already tied together by this community of interest, and it is one which in a practical sense cannot now be successfully untied, because the Burlington would suffer heavily if it were dissociated from either one of the Northern Lines, since for over a quarter of a century it has been built up with reference to association with both of them. A similar community of interest has existed for a great many years on account of the equal ownership by the Northern Companies of the Spokane, Portland & Seattle, which represents a total investment of more than $100,000,000. Under the wise policy which Congress has now adopted as to further railroad consolidation, the next logical step should be taken, and that is to unify the control and the operation of the two Northern Companies whose interests are already so tied together that they cannot be untied.

Northern lines largely owned by same shareholders.—The community of interest which exists through their ownership of the Burlington and Spokane, Portland & Seattle is intensified by an extensive common ownership of the Northern Lines themselves, more than 60 per cent of the 4,969,350 shares of stock outstanding being held by those who own stock in both companies.

Public Interest in Railway Economies

The public interest in transportation is twofold: First, and most important, the American public demands that adequate transportation of the highest quality shall be provided at all times promptly when desired; and, second, that it shall be furnished at reasonable rates. It is gratifying to be able to say that the adequacy and excellence of railway transportation now is generally admitted, so that subject need not be discussed. In the Middle West and Northwest, where the population depends almost wholly on rail transportation, and where, by reason of the great distance from markets and the relative disadvantage to which the Panama Canal has placed the territory compared with the regions nearer the seaboard, the matter of railway rates has received much public attention.

Return inadequate in Northwest.—That railway rates have been increased less in the Northwest region than the average increase in the United States, and very much less than the increases which the railways must pay for the things that enter into the cost of producing transportation, is sometimes lost sight of. The truth is that compared with 1913, which, being the last year before the World War, is commonly used as a base year, the average revenue per ton-mile in the Northwest region is only 40 per cent more, while for the United States as a whole it is 53 per cent more, and for some regions 80 per cent more, notwithstanding the facts that wages have increased 115 per cent, taxes have increased 185 per cent, and the average cost of all commodities 60 per cent during the same period. The result of this lesser increase in rates in the Northwest has been that the average return earned by the carriers in the Northwest region is less than the average for the United States and is far below the statutory return of 5¾ per cent fixed by the Interstate Commerce Commission as being fair, having averaged only 3 per cent for the six years since Federal Control.

Must reduce expenses or raise rates.—The bearing which these facts have upon the present question is that it would be greatly in the public interest if a way could be found to improve the earnings of the Northwest railways without increasing rates and without impairing the service rendered.

Savings from Proposed Plan

Now, there is a distinct limitation to further economies through increased efficiency and improvements to the

*Abstract of a statement issued on January 27.

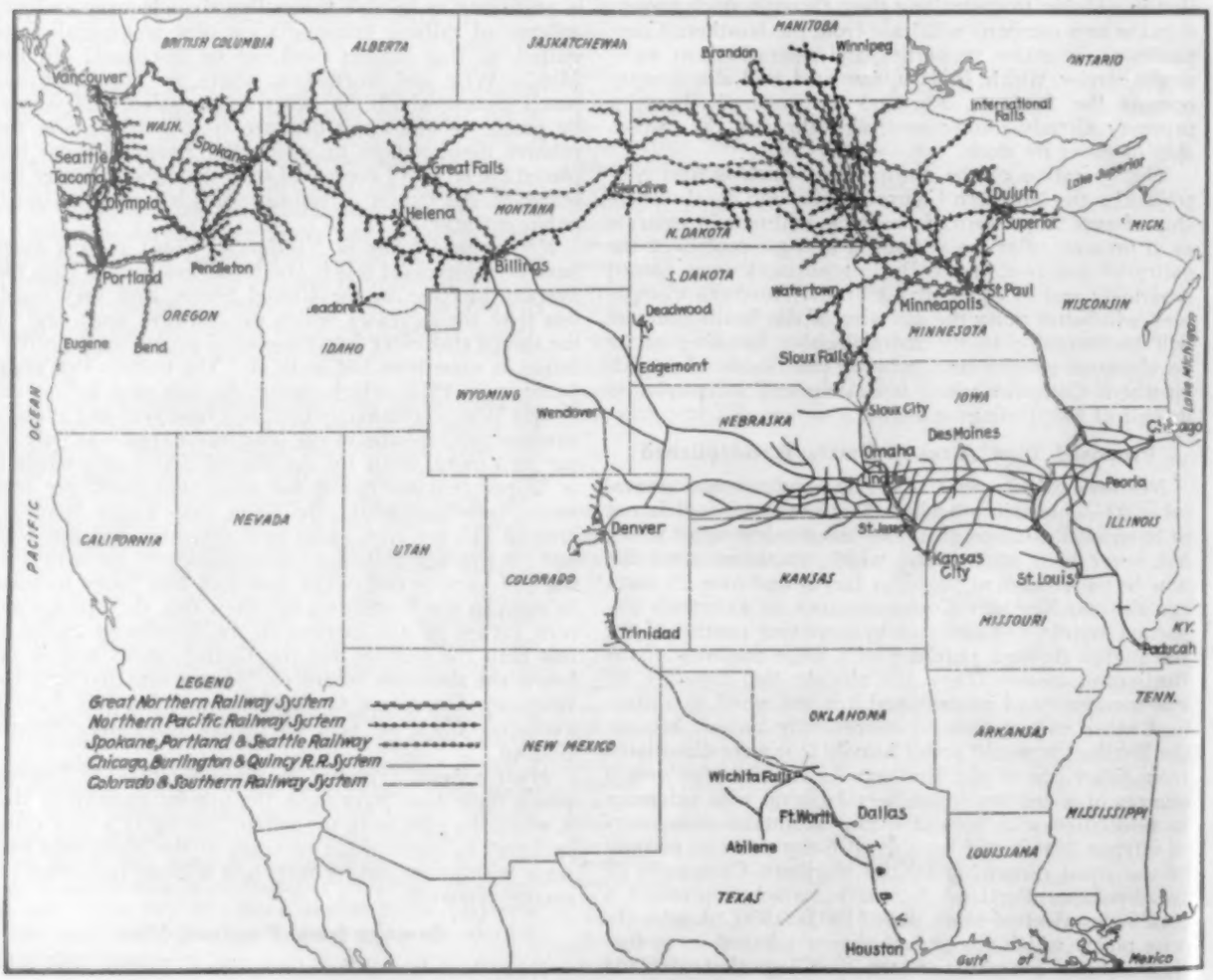
properties as at present operated, but it is believed that the economies which will result from the unified operation of the Great Northern, Northern Pacific, and Spokane, Portland & Seattle, and an even closer association with the Burlington than has hitherto existed, are certain to be large and that important improvement to service also will result.

There are many points of contact between these roads, and while occupying different territories there are alternate lines between several points; also the wide geographical spread of territory conduces to better average use of equipment. These facts lend themselves to a plan for saving in operating expenses and at the same time performing more service with the present railroad facilities.

Some duplication now avoided.—The Great Northern and Northern Pacific have avoided the building of some duplicate lines and terminals by making joint use of lines and terminals. To that extent, savings by joint use and by avoiding unnecessary construction of separate lines have already been made. Also each of the Northern Lines uses jointly with the Burlington and with the Spokane, Portland & Seattle, certain facilities, and each does some switching for the other, for the Burlington, and for the Spokane, Portland & Seattle. The purchase of the Burlington by the two Northern Lines is the greatest example of avoidance of duplicate construction; another example is the joint construction of the Spokane, Portland & Seattle and subsidiaries at a cost of more than $100,000,000. Examples of joint use of track which have avoided construction are between Seattle and Portland, 182 miles; three stretches of track between Seattle and Vancouver; B. C., 72 miles; between Huntley and Fromberg, through Billings, 50 miles; between St. Cloud and St. Paul, 72 miles.

Terminal deliveries would be expedited.—There is now practically no duplication of terminals as between the Burlington and the Northern Lines at their points of contact, namely, Twin Cities, Sioux City and Billings; but in many instances the two Northern Lines are operating duplicate terminals and duplicate train service, and in those instances further economies can be made. A saving could also be brought about by avoiding the necessity of performing some terminal work; for example, a car coming into a terminal from the Great Northern line and destined to an industry on the Northern Pacific could be loaded out again, after having been made empty, without any necessity for being returned to the Great Northern as at present. Likewise, the expense of joint inspection would be saved. Another way that work could be avoided would be by routing the freight into a terminal via the line on whose track the industry to which it is destined is located. Elimination of delay to cars incident to switching and joint inspection, which would be accomplished by single operation, is important both from the standpoint of economy and improved service.

Elimination of duplicate lines and terminals and reduction of terminal work would directly reduce the cost



The Proposed New Northern Railway System and Controlled Lines

of conducting transportation, that is, the cost of handling cars on the road and in the terminals. This item on the Great Northern, Northern Pacific, and Spokane, Portland & Seattle systems is more than $70,000,000 annually. Avoidance of even a small proportion of the work which this cost represents would mean very substantial economies.

Better Use of Equipment

Better use of cars and locomotives on enlarged system.—Benefits from the single control of cars and locomotives would come to the public directly in better service and indirectly through the savings the carrier would make by requiring less investment in equipment and by reducing the cost of equipment maintenance and operation. In the matter of equipment, although operated as two separate companies, the Northern Lines and the Burlington would be able to take advantage of their close relationship and effectuate a single control of cars and locomotives.

It seems self-evident that the public can be given greater assurance of an ample car supply with a reservoir of 170,000 cars available under one authority which will distribute them directly to the points of greatest need than under present conditions with three groups of 50,000 to 70,000 cars under separate organizations. The number of cars required for the peak demand of the unified system would be about 10 per cent less than the aggregate number required to give equally good service on the three separate roads. This would mean that several millions of dollars could be saved annually, and at the same time a superior service given to shippers. The advantages of a single control of locomotives are similar to those derived from such control of cars, namely, the availability of a reservoir of 4,500 locomotives to avoid delays or congestions to freight; and the smaller investment in locomotives because the peaks of business on the three units are not simultaneous and would be protected by the aggregate supply of motive power on the enlarged system. The interest, depreciation and maintenance charges thus avoided each year would, as in the case of cars, amount to more than a million dollars.

Larger percentage of cars would be on home line.—The cost of car repairs has a definite downward trend as the percentage of home cars on line increases. In the case of a foreign car, the company on whose line that car may be located, in the absence of standard material for that particular car, will try to keep the car moving by making numerous emergency repairs, perhaps repeated at several terminals, while if the car were on its own line it would be properly repaired in the first instance and avoid the succession of patch repairs which otherwise would be made. The effect of the single operation of the Great Northern, Northern Pacific, and Spokane, Portland & Seattle and the unified control of the Burlington would be to increase the percentage of home cars on line, and in that way bring about a material reduction in the cost of car repairs. Cars would be at home at all repair points on the combined system, making it possible to do repair work promptly when needed and to better advantage than when repairing foreign cars; and at present the cars of any one of these lines are foreign cars on the other lines. As the annual cost of repairs to freight cars on these four lines is $25,000,000 a comparatively small percentage of saving would be a substantial sum.

Standardization feasible.—The similarity of requirements makes it entirely feasible to standardize equipment on the proposed system. For example, box cars on each of the roads at present must be built and maintained to meet the requirements of bulk grain shipments. These are requirements which other railroads in some other parts of the United States do not have to meet, and for that reason the type of box car that is suitable for them in their territory is not the type that would be used in the Northwest.

Standardization of maintenance of way materials is practicable because the climatic and traffic conditions encountered are much alike on the two Northern Lines and the requirements are, therefore, practically the same. This would apply to ties, rails and fastenings, bridges, buildings, signals, and other wayside structures. Here again, dealing with an item of $50,000,000 per year for maintenance of roadway it is apparent that a comparatively small percentage of saving would make a very large sum annually.

Advantages in combined purchases and stores.—While many articles are purchased in quantities sufficiently large to obtain the best price, so far as price is affected by quantity, there are some things like rolled steel wheels, signal wire, electrical supplies, incandescent lamps, stationery, steel castings, creosote and zinc chloride for tie treatment, that could be advantageously purchased in larger quantities than is possible by each of the three roads separately. There would be an advantage in buying in larger quantities such materials as bolts, nuts, washers, nails, screws, and other items, which, by the combined purchases, could be handled in carload lots and unbroken packages. The enlarged system would make available to the entire mileage the sources of fuel oil, coal, timber and some other supplies which are local to one or the other of the lines, but are not common to all.

It is obvious that there could be a large reduction in the aggregate stock of material carried, by the simple process of eliminating duplicate stocks. The possibilities of savings in this connection may be appreciated from the fact that the average value of such stock of material and supplies totals $25,000,000 on the Great Northern, Northern Pacific and Spokane, Portland & Seattle lines.

Service Would Be Improved

Service would be improved by eliminating terminal delays at transfer points and by getting a better distribution of cars throughout the year, thus making available a larger number of cars for the seasonal movement of crops which mature at widely separated dates in the enlarged territory; by consolidated offices and tariffs; by avoiding switching and the charges incident thereto at points common to any of the lines; and by automatically making every industry now on the Great Northern, Northern Pacific or Spokane, Portland & Seattle an industry on the combined system. To a large extent, industries common to the Burlington and either one or both of the Northern Lines would benefit likewise.

Benefits from present association would be extended.—The association of these two lines with the Burlington for the last 25 years has resulted in improvement of service and convenience to the public more or less in the manner and of the character described. The ownership by the Great Northern and Northern Pacific in equal parts of over 97 per cent of the stock of the Burlington has resulted in the development and use of facilities in a manner which permitted prompt and efficient interchange and has resulted in close working traffic and operating arrangements to the end that shippers and consignees have been educated to the fact that by routing business via the Great Northern or the Northern Pacific, in connection with the Spokane, Portland & Seattle and the Burlington, they receive superior service. The divorcing of one of the Northern Lines from the Burlington, as has been tentatively suggested, would

mean loss to the public of many of the advantages which have come from the association, so that, on the one hand, while further improvement in service will result from closer associations of these lines, on the other hand separating them would cause a loss of a part of what already has been accomplished.

Public Interest in Financial Strength

Good credit necessary for development.—The economies which I have suggested will directly tend to increase the financial strength and the credit of this group of railroads, and on that account will put them in better position to meet the needs of the West for adequate railroad expansion. Moreover, the unified operation of the Spokane, Portland & Seattle and the unified control of the Burlington, both of which are already jointly owned, will remove the danger of divided councils so that this unification may well lead to more confident and decisive expansion of these properties in the public interest than would be possible with the two Northern Companies acting independently of each other.

One of the essentials for the success of private operation of railroads is that the railroads shall have such credit as will enable them to provide for the necessary extensions into new territory and for enlarging and improving existing lines to care for increasing business. More intensive use of existing facilities will help in caring for increased business, but stabilized credit is essential to meet the growing needs of a growing country; especially is this true in the West where considerable additional mileage should be built. To serve a new and sparsely settled section where branch lines must of necessity be built and operated without profit for a considerable period, the strength shown by the proposed system is none too great.

Northwest needs strong railways to reach competitive markets.—A strong, energetic railway is able to do a great deal to aid and protect its shippers in reaching competitive markets and thus to promote the growth and progress of its territory. The real public interest of the Northwest is to get such service from its transportation agencies and such protection through them against competing districts in marketing the products of the country as will open up the largest possible distributing areas for those products and thus bring the greatest possible prosperity to the section.

Competing regions have strong railways.—Only by co-operation of railways able and willing to assist the producers in reaching wider distributing areas will the region be assured of the fullest development of its resources. However willing a railway may be to assist, it cannot do so if the return on investment over a long period of years is inadequate to attract the capital necessary for improvements and expansion. The southern and southwestern parts of the United States on the south, and Canada on the north, are served by large and strong railway systems, which are able to, and do, protect the shippers along their lines in the matter of reaching markets. The Northwest requires equally effective protection on the part of its railways. The Northern Railway System proposed, together with the Burlington affiliation, meets this requirement in the matter of its great distributing possibilities, and in the opportunities for economies which will go far towards taking the place of increases in rates, which otherwise may be necessary.

Existing Trade Routes Would Be Improved

I wish also to point out that the unified operation of the Great Northern, Northern Pacific, and Spokane, Portland & Seattle, and the resulting closer co-operation with the Burlington, not only would result in economies and improvement in service, but would in addition accomplish another requirement that is very important in the public interest, namely, that of preserving existing routes and channels of trade. The relationship between these lines has resulted in railway and industrial development which anticipated the continuation of that relationship and the establishment of closer bonds, which the present plan will, to a large extent, accomplish.

Trade charactristics of Northern Lines and Burlington territories are supplementary.—Producers of all kinds of manufactured goods, including implements and machinery for the farms, mines, and mills of the Northwest, as well as large jobbing and merchandise houses which are served by the Burlington, have distributing offices and warehouses located on both of the Northern Lines, while the Burlington territory consumes large quantities of lumber, grain, livestock, fruit, fish, and other western products which originate on the two Northern Lines and the Spokane, Portland & Seattle. The large volume of traffic which moves both east and west through the interchange points at the Twin Cities, Sioux City and Billings indicates the importance of the trade routes that have become established. They represent, to a large extent, the result of co-operation between the carriers and shippers in developing and marketing the resources of the country; to disrupt them would be to retard such progress, while to maintain and improve them would advance it. These railway companies, as well as shippers and consumers, have every reason to desire and to expect that such important routes will be maintained and improved.

Competition Would Be Preserved

Northern lines complementary.—While the Great Northern and Northern Pacific are competitive between many points, they are to a very large extent complementary in character, due to the fact that the preponderance of mileage of the Northern Pacific is on the western part of its line while the preponderance of mileage of the Great Northern is on the eastern part of its line, approximately 60 per cent of the Northern Pacific's trackage being west of the Montana-North Dakota state line and 40 per cent east thereof, while only 42 per cent of the Great Northern's trackage is west and 58 per cent east of that line, compared with 49 per cent west and 51 per cent east for the combined system, which gives a much better balance.

Other carriers would afford competition.—It is also true that there is substantial competition with other transcontinental roads at practically all important terminals, both east and west, served by the Great Northern and Northern Pacific. The population of competitive communities which are served by the Great Northern, Northern Pacific, and other roads is about 2,000,000, while less than 125,000 people are located at communities which are served by both the Great Northern and Northern Pacific but by no other road.

Welfare of local points promoted.—Moreover, the stations which are served only by the Great Northern and Northern Pacific are so situated between or near points which will continue to be served by other lines that the standards of rates and service cannot be materially altered to the detriment of such places, and hence the elimination of competition, which the figures indicate is relatively unimportant, will be largely theoretical instead of practical. The places will continue to have the benefit of the standards of rates and service which are established by the broadly prevailing competitive conditions, and also will derive important protection from the principle, which has become progressively more controlling with railroads, that it is important to protect

purely local points in the matter of service, since all the business at those points goes to the one railroad; whereas if there is injurious discrimination in service in favor of competitive points, the result is to diminish the traffic which would go wholly by that railroad in favor of traffic which it would have to share with competitors.

Therefore, by the tests of saving in operating costs; improvement of service; strength necessary for expansion; preserving existing routes and channels of trade; and preserving competition, the single operation of the Great Northern, Northern Pacific, and Spokane, Portland & Seattle roads as one system seems to be justified. What appears to be a simple, practicable, and eminently fair method of accomplishing this is proposed; namely, that for each share of Great Northern or Northern Pacific stock there will be exchanged a share of stock in the new railway company which will operate the Northern Pacific, Great Northern, and Spokane, Portland & Seattle, and through single control of nearly all of the Burlington stock will effect a closer working relationship with the Burlington. I invite the careful consideration and study of this plan by the Northwestern public, and believe that such consideration and study will lead to the conclusion that it not only should be permitted but encouraged.

Railroad Shares Left Outstanding But Shorn of Value

THE Great Northern Railway Company, by decision of the Supreme Court of the United States, is called upon to issue a thousand shares, more or less, of its stock, which will be duplicates of shares that were issued before the great war and which are still in the hands of parties unknown, now residing in Germany or elsewhere, and deemed to be alien enemies. Those old shares, thus held will have, virtually, about the same status as counterfeit papers. That is to say, the railroad company must be on guard against redeeming them, and persons wishing to buy must be on the lookout against ignorant or dishonest third parties who might offer to sell with the understanding that good title was being given. The government, in effect, seized the rights of those shareholders, but did not seize the actual papers; its knowledge of those rights having been derived wholly from statements copied from the books of the railroad company.

The decision is by Mr. Justice Brandeis (handed down on January 17, the title of the case being Great Northern versus Sutherland). The Supreme Court affirms the decree of the federal district court for southern New York which requires the issue, countersigning and delivery of new certificates for shares of stock standing on the books of the company in the names of or held for enemies, without presentation or surrender of those outstanding, the new certificates to be in the names of certain trust companies as depositaries for the Alien Property Custodian.

The railroad pleaded that the corpus of the shares, as distinguished from an undefined interest therein, was not seized or demanded during the war.

The Supreme Court holds that the Custodian enumerated in his demand upon the railway company made during the war "substantially every right which the owner of shares could exercise, except the right to receive a certificate representing the stock and the right to dispose of the same. . . . The Custodian sought possession, not title. The term seizure as used in this connection connotes merely the taking of possession. Hence there was no occasion to define the extent of the enemy's ownership. The demand operated as a symbolic seizure. . . . The Custodian's claim and the decree rest wholly upon the demands made during the war. Since the Custodian's 'possession' was completed before the end of the war, it is immaterial that the demand for new certificates was not made until after the war. The Act of November 4, 1918 (amending the Trading with the Enemy Act of 1917) had made it the duty of the corporation to cancel the old certificates and to issue new ones, whenever the Custodian had seized shares. . . . The seizures made before November 4, 1918, were equally effective with those made after. . . . The requirement that the company make complete delivery to the Custodian of the possession of the shares including the usual indicia was well within the war powers of Congress."

The railway and the registrar contended that the requirements of §7 (c) of the Act as amended, to issue new certificates whenever the Custodian had demanded the shares of alien enemies, deprived them of due process, since it conferred upon the Custodian rights not possessed even by the owners of the shares, that is, transfer without surrender of the old certificate. The court says that neither the railway nor the registrar has any interest in the shares. They are protected in making delivery of the new certificates by §7 (e) of the Act providing that any transfer or delivery made to the Custodian thereunder should be a full discharge "for all purposes of the obligation of the person making the same to the extent of the same."

"During the war the Great Northern filed with the Custodian, from time to time, the reports required by §7 (a) of the Trading with the Enemy Act. All of these reports except one contained lists of persons who were registered owners of specified numbers of shares and were believed to be enemies. One report stated that Lieber & Co., believed to be an enemy, was believed to be the beneficial owner of shares standing in the name of A. Biederman & Co. All these reports stated that the actual location of the certificates representing said shares was unknown to the company. In consequence of these reports, the Custodian made upon the Great Northern demands in writing in respect to the shares therein referred to. All these demands were made during the war; and all were in substantially the same form. The construction and effect of that document are the principal matters in controversy."

The form quoted in the opinion relates to 12 shares of stock standing in the name of Albertine, Baroness Schauenburg, Friedburg, Baden, Germany.

A 4-8-2 on the South Australian Railways

Grain Rate Reduction Ordered Canceled

WASHINGTON, D. C.

THE six-cent reduction in rates on grain and grain products proposed by the Minneapolis & St. Louis and Minneapolis, St. Paul & Sault Ste. Marie from Minneapolis and Duluth, Minn., to the East was found not justified in a 6 to 4 decision of the Interstate Commerce Commission made public on February 17, ordering the suspended rates canceled. Comissioners Campbell, Esch, Lewis and McManamy were the dissenters.

The proposal represented an effort on the part of the two roads to secure some of the traffic that is moving from the affected territory over rail-lake-rail routes through Duluth and Buffalo, "at the behest of the Minneapolis interests," the commission says in its report, and would affect the domestic proportional joint rates to points in trunk-line and New England territories on grain and grain products originating at points in Montana, North Dakota, northwestern Minnesota and a few points in South Dakota. On protest the commission suspended the tariffs, which had been filed to become effective on August 25 and September 2, until January 22, when they were again voluntarily suspended to March 1.

Would Disrupt Grain Rate Structure

"Approval of the proposed rates would, we believe," the majority report said, "lead directly to a disruption of the grain-rate structure, have marked effects on marketing and distribution, and of necessity impair the revenues of the carriers and their ability to render satisfactory service. That there would be any substantial benefit to respondents, Minneapolis, or the producers of wheat, is doubtful. Competition would undoubtedly force other carriers serving Minneapolis to meet the proposed rates and respondents could not hope to secure any substantially greater share of the traffic than they do under the present rates, unless as a reward for forcing these reductions. Corresponding reductions from competing communities would follow and Minneapolis would be in no better relative position than now."

As to the argument that farmers would benefit by the reductions the report said: "The farmers could hardly gain from the reductions. The Minneapolis interests claim that the reduction is necessary in order that they may maintain their position in the milling industry, and accordingly it is not probable that any part of the reduction would be passed back to the farmer. It is the rates to the primary markets that are of most importance to the farmer." Attention was also called to the fact that rates on grain and grain products in the West are involved in the general rate structure investigation undertaken pursuant to the Hoch-Smith resolution, and that the proportional rates from the various western markets to Chicago and related gateways are included, both as to the measure of the rates and as to the relationship between the various western markets.

In its statement of the case the commission said in part:

> The proposal represents an effort on the part of respondents to secure some of the traffic that is now moving from the affected territory over rail-lake-rail routes through Duluth and Buffalo, N. Y. The rates from the affected territory to Minneapolis and Duluth are generally on a parity, and over all-rail lines the same is true of the present rates beyond. However, from Duluth to Buffalo relatively low cargo steamer rates are available on grain, which added to the ex-lake rates on grain or its products from Buffalo to the destination territory make through rates that are less than the all-rail rates. It follows that these lake-rail rates, when added to the inbound rail rates to Duluth, make lower through rates from the affected territory to the East than are made on the Minneapolis or Duluth combination over all-rail routes. Several of the important Minneapolis millers have built large plants at Buffalo, and as a milling center Buffalo has accordingly had a marked development in recent years. The milling business at Minneapolis, on the contrary, has been losing ground. With these facts before them, the grain, industrial and commercial interests of Minneapolis, together with the northwestern millers, particularly those who have no mills at Buffalo, have besought respondents for several years to build up Minneapolis as a grain and milling center by an outbound rate readjustment that would draw some of the grain away from Duluth and the lake-rail routes and bring it through Minneapolis for movement over the all-rail routes. The present proposal is the result. What respondents mainly seek is a curtailment of the movement of grain from the fields directly through Duluth and over the lake-rail lines, coupled with a corresponding increase in the movement of grain direct to Minneapolis and thence out over all-rail lines, either as grain or its products. The proposed rates are to apply only on traffic from points where the inbound rates to Minneapolis are not less than those from the same points to Duluth, except that some additional reductions, hereinafter dealt with, are proposed in order to avoid departures from the long-and-short-haul provision of the fourth section.

Dissenting Opinions

Commissioner Campbell, in a long dissenting opinion in which Commissioner Lewis concurred, said that "even if the reductions were not used by the Minneapolis interests in the purchase of grain, but for the purpose of maintaining their position in the milling industry, they would still benefit the farming interests of the Northwest by strengthening the Minneapolis grain market and promoting keen competition between that market and Duluth, and thus bring about higher farm prices." Under the Hoch-Smith resolution, he said, it is the duty of the commission to require the establishment of the lowest possible lawful rates on agricultural commodities in which the farmer is vitally interested compatible with adequate transportation service, and he asked how the farmer "is ever going to secure any relief as contemplated by the Hoch-Smith resolution if we persistently withhold from him what are admitted to be reasonable minimum rates for fear that the probable effect would be to take away some revenue from the carriers."

McManamy Mentions Hoch-Smith Resolution

Commissioner McManamy dissented on the ground that the conclusions reached by the majority "do not square with my understanding of the object sought to be accomplished by the Hoch-Smith resolution" and said that the rates which the majority proposes to find unlawful range up to 3.5 cents in excess of the export rates to the eastern seaboard.

Commissioner Esch dissented without writing a separate opinion.

Commissioner Eastman, in a separate concurring opinion, said that "this is by no means a case where the Minneapolis & St. Louis wishes to make a competitive reduction on its own account." "It is quite unwilling to do that", he said. "What it seeks to do is to compete with the help of its eastern connections and to make them pay a part, and probably the greater part, of the expense," through a readjustment of divisions. "I see

little reason to believe that the farmer would benefit," he said. "The farmers in the affected territory already have the benefit of even lower rates over the lake routes. The declared purpose of the reduction is to help Minneapolis in meeting this competition." He added that if the rates were put into effect similar reductions would be made by other lines and that the real hope of the Minneapolis & St. Louis seems to be that even in that event it would receive a larger share of the traffic than it now receives by grace of the milling and commercial interests of Minneapolis, as a reward for starting the reductions. "This is an illustration of the power over rates which large business interests, located at points where railroad competition is acute, possess in the opportunity to distribute or divert traffic as between rival routes.

To the general effect of such power upon the freight rate structure of this country the agricultural interests and this commission may well give attention."

Woodlock Concurs

Commissioner Woodlock in a concurring opinion said in part:

I agree with the disposition made of this case and have no criticism to offer of the considerations urged in support of that disposition. I deem it necessary, however, to direct attention to certain extraordinary features of the situation presented to us which in my judgment would warrant us in a summary order of vacation of the suspended schedules, quite apart from the other facts in the case as described in the report.

On its face the proposal of the respondent railroads is a legitimate exercise by carriers of managerial discretion in seeking to protect or build up sources of traffic naturally tributary to their lines by means of rates lower than those which we would ordinarily recognize or prescribe as maximum rates. In a case of this sort our function would ordinarily be to determine whether or not the rates proposed fall below the level of minimum reasonableness, and whether or not their establishment could be effected without unnecessary or excessive disturbance to other rates.

We have before us, however, a situation of character quite different. The rates under suspension are proposed by two carriers on behalf of themselves and connecting carriers to the east from whom they have received power to make just such rates under the usual concurrences. These eastern carriers, however, are before us requesting that the rates be not allowed to become effective. Thus we have a group of responsible carriers requesting us to forbid them to do something which through their lawfully appointed and still continuing agents they are asking our permission to do. Admittedly, it was, and is, in their power by cancellation of their concurrences to prevent their western agents from committing them to the proppsed rates, in which case the matter would not be before us. They have, however, chosen to come to us and ask to be preserved from the consequences of their own acts. There is, indeed, a sort of Gilbert-and-Sullivan atmosphere about the proceedings which is no doubt from one aspect of the matter not without its humor, but regarded from another aspect is highly suggestive of an abdication by carriers themselves of their legitimate powers and an abdication which amounts to a default in duty. We are not infrequently told about the bad effects of governmental interference with business and with private enterprise. The criticism would come with better grace if those who made it demonstrated that they were able and willing to attend to their own business without invoking the help of governmental regulation.

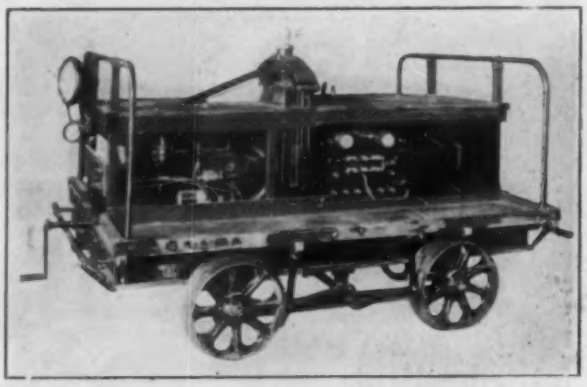
Prescinding, however, from this aspect of the matter, the case having been left to us for determination on its facts, we have before us the simple fact that the carriers chiefly concerned in the matter do not desire that the proposed rates shall be established. Presumably these carriers do not feel that it is necessary or desirable to establish these rates to protect their traffic. In face of that fact, it is no business of ours to step into the breach created by the default of carrier management. It is not necessary to inquire whether the proposed rates are sufficiently compensatory or not. They certainly lie well below the limits of maximum reasonableness. The right, however, to make rates of this sort lies with carrier management, and not, save under very unusual circumstances, with us. No such circumstances are present.

Upon the admitted facts alone it would be our plain duty to order the suspended schedules vacated and the proceedings dismissed.

Self-Propelled Welding Car

A SELF-PROPELLED welding car consisting of a gas-engine-driven welding generator, mounted on a car having flanged wheels and equipped with electric driving motors, has been developed by the Electric Arc Cutting & Welding Company, Newark, N. J. The car is a standard track car and is equipped with a special device for taking the car off the track and replacing it. The driving motor is a standard vehicle motor which propels the car through a chain and sprocket drive. The control provides uniform acceleration with any desired running speed in either direction and is interlocked so that the car cannot be moved when the generator is being used for welding. A special lighting transformer is provided for illuminating the work at night. There are also headlights and tail lights on the car.

The oiling system has a unique feature which cuts off the magneto ignition in case the oil gets too low or the oil pump fails to work. In addition to the speed limiting governor, the gasoline engine is provided with a throttle governor for welding which causes the engine to idle until the welding electrode is actually touched to the work.



This Set Is Designed for the Welding of Frogs, Switches and Battered Rail Ends

The engine immediately resumes idling when the arc is broken and it is expected that this feature will considerably prolong the life of the engine.

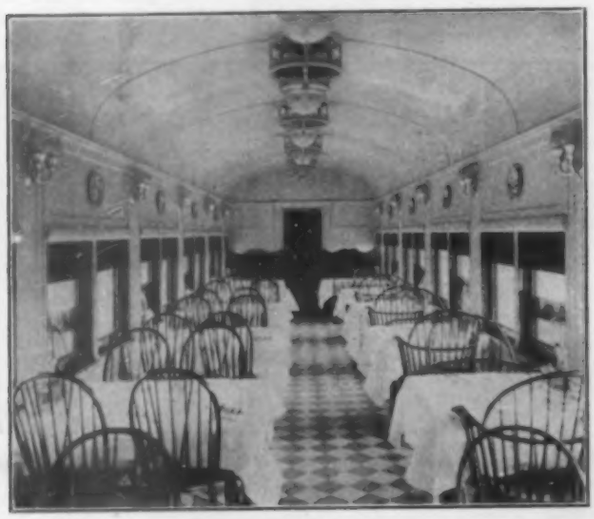
The welding generator supplies both alternating and direct current for all arc welding. The generator provides 20-volt current for metallic arc welding by means of a series differential field; a series compound field provides 40-volt welding current for carbon-arc welding. The generator runs on ball bearings and is equipped with an interpole commutating field. Through the transformer 110 or 220 volts can be obtained for lights or the operation of drills or grinders.

A MATTER OF SENTIMENT, which is valued at $50,000 a year, is the interpretation, in a press dispatch, of the action of the Delaware & Hudson Company in continuing the operation of its Honesdale branch, 27 miles long, the sum named being the loss sustained by the company in the operation of this branch. The management decided not to ask authority for the abandonment of the line because it was the first piece of railroad built by the Delaware & Hudson Company, 100 years ago. It was at Honesdale, August 8, 1829, where Horatio Allen ran the Stourbridge Lion, the first locomotive used on a railroad in America.

D. & H. Dining Cars of Colonial Period Interior Design

THE Delaware & Hudson has recently remodeled the interiors of two of its dining cars, in which the furnishings and wall decorations are suggestive of the Colonial period. Both cars are identical in interior design and furnishing, except that one car is finished in green and the other in blue. These dining cars are of steel underframe construction and have six-wheel trucks equipped with clasp brakes. The clerestory roof on the original cars was replaced with a turtle-back roof. In rebuilding the roof, the side framing was reinforced with steel angles which connect the underframe with the steel side-plates. The roof is covered with one-ply chemically treated canvas.

The new type roof lends itself to the general interior scheme of decoration. The ceiling and side trim are



Interior of One of the Remodeled Delaware & Hudson Dining Car

enameled an old ivory eggshell finish with a contrast of mahogany finish for the window sash, stops, sills, steam pipe guards, tables and chairs. The interior appearance is that of cleanliness and tends to give an air of restricted informality.

In further keeping with the Colonial type of interior treatment, all the hardware and fixtures are of appropriate design and finished in silver to harmonize with the ivory finish. The design of the double wall bracket lamps is in keeping with the general atmosphere of the Colonial period. Six combination ventilator register center lamps and five Safety fans with rotating deflectors hang from the ceiling. The ventilator registers are joined together by air ducts hidden in the space between the roof and the ceiling. Adequate ventilation is thus provided without creating a draft.

Fancy plates, characteristic of the Colonial period, each containing graphic reminders of that time, and done in blue and white, or green and white, are hung on the walls as shown in the illustration. The floor has been covered with cork and rubber molded in four-inch diamond squares laid like tile in alternating colors of ivory and blue or green with a border in the same color. This provides a sanitary floor covering which deadens objectionable noises and contributes to the general appearance.

Seats are provided for 40 people. Windsor chairs with and without arms and corner settle seats having loose homespun covered cushions, carry out the general effect. The tables, seating two and four people, are in keeping with the other appointments and are arranged in the usual manner, except that the end tables on both sides of the aisle have four seats. Care has also been taken to make the kitchen and pantry convenient and easy to clean. The latest in kitchen equipment has been installed and arranged to make every corner dirt-proof.

Accidents to Trains Investigated in August*

THE Bureau of Safety of the Interstate Commerce Commission investigated in the month of August, 1926, nine train accidents; three collisions and six derailments. Following are abstracts of the reports prepared by the Bureau:

Spokane, Portland & Seattle, Lyle, Wash., August 3.—Eastbound passenger train No. 3, consisting of locomotive No. 156 and three cars, was derailed by the breaking of the right main rod of the locomotive; and the engine and tender were overturned and the fireman killed. One passenger and one employee were injured. The broken rod struck the connection of a facing point switch, causing the switch points to open under the train. The fracture of the rod started at the front end at a hole in the bottom of the rod for a set screw ⅞ in. in diameter, which break apparently permitted the spreading of the jaws. The initial break probably had started several days prior to the final failure. The inspector holds that the defect could not have been detected when the engine was subjected to a general inspection in July.

Atchison, Topeka & Santa Fe, Waynoka, Okla., August 3.—Eastbound freight train, extra 1167, consisting of a locomotive, a caboose and one car, ran into a helping locomotive, moving in the same direction, within yard limits; and the tender of the leading engine was demolished. The fireman of this engine was killed and two other employees were injured. There was a good view. The helping engine had been detached from the freight only a short time before and the engineman of 1167 is held responsible for not operating his train under proper control within yard limits. The fireman, having been first to discover the danger, is censured for not taking more energetic measures to warn the engineman.

Louisville & Nashville, Drivers, Ill., August 12.—Freight train derailed and engineman and fireman killed at a point where a rail had been taken out for renewal. This derailment was reported in the *Railway Age* of October 16, page 737.

Long Island, Calverton, N. Y., August 13.—East bound passenger train No. 212, moving at high speed, was derailed at a facing point switch, and the two locomotives of the train, with the first car, were overturned. Five passengers and the engineman and fireman of the leading locomotive were killed and 21 passengers and 7 employees were injured. The cause of the derailment was the defective condition of the switch, for which section foreman Dinizo is held responsible. The connecting rod of the switch had dropped off the bottom of the vertical shaft, the nut which should hold it having

* Preceding reports in *Railway Age* December 18, November 13, August 28, August 14 and July 10.

† In a memorandum issued on January 18, the Interstate Commerce Commission states that the vice-president of the Long Island advises that all main line switch-stands of the type involved in this accident have been replaced with stands of a more modern type.

gradually worked off because of the absence of a cotter pin which should have held it. The switch is a very old one and the inspector finds others of the same kind in use on the main line of the railroad. In some places nails were used instead of cotter pins and in some instances there was no nut at all, the connecting rod being held in place only by a washer supported by a cotter pin. Conditions are found which indicate laxness in the maintenance of switches as well as in supervision and inspection. The section foreman began work on the track in 1913, and was made section foreman on January 1, 1924, but he cannot read or write, and has little understanding of English. Even when re-examined through an interpreter his statements were of doubtful value.†

Southern, Stockbridge, Ga., August 17.—Extra freight train No. 6571, moving south at about five to eight miles an hour, collided with work extra 200, moving north, badly damaging both locomotives and causing the death of the fireman of the work train. Five other employees were injured. The conductor of the work train had intended to have 6571 wait at the station, about two miles north, but had given his flagman first, written instructions, and then supplementary instructions orally, and confusion of these instructions led to the movement of 6571 southward when it had no right to move. The conductor is held at fault for not fully complying with the rule requiring flagging instructions to be given in writing, but the flagman is also at fault, as he knew, when the extra moved southward from the station, that he ought to have insisted that the train be held. The conductor of the extra, and a trainmaster who was present, were also at fault for not following the rule that, in cases of doubt, the safe course must be taken. The report contains a half dozen pages of details about the misunderstanding of the orders, and numerous conversations between the flagman, trainmaster and others are cited; but the substance of the story is that there was too much disposition to take a little risk. Among other incidents, it is mentioned that a brakeman asked the engineman of 6571 where he wanted to be buried, to which the reply was "I will not be on the engine when they hit."

Great Northern, Deer River, Minn., August 20, 11:55 p.m.—A westbound freight train consisting of 75 empty box cars and a caboose, drawn by locomotive No. 3207, moving at about 25 miles an hour was derailed at a facing point switch and the fireman, who jumped off, was killed. The inspector finds that the switch was partly open, apparently due to malicious tampering; but the culprit was not discovered. The switch light had been extinguished. The line is straight and the inspector holds that if the engineman had been keeping a proper lookout, he could have seen that the switch light was dead, and could have stopped the train.

Chicago, Burlington & Quincy, Wyanet, Ill., August 22.—Eastbound freight train No. 70 moving at about 30 miles an hour was derailed by the failure of an arch bar in a truck of a tank car, and four cars were demolished. Of 11 trespassers riding on the tank car, seven were killed and four injured.

Atchison, Topeka & Santa Fe, Thoreau, N. M., August 25, 12:15 a.m.—Eastbound extra freight train No. 3240, moving at about 20 or 30 miles an hour, was derailed by a handcar; and a pile driver outfit, ten cars and other apparatus belonging to a bridge gang, were wrecked and the conductor of the freight train was killed. One other person was also killed and 12 employees were injured. The freight train consisted of 55 cars and a caboose and also 14 cars of a bridge builder's outfit which were being pushed ahead of the locomotive. The conductor who was killed was riding on the leading car. The handcar was in charge of three boys who had taken it out and started to use it for a short journey without permission. They had succeeded in getting it nearly off the track when it was struck by the train. The eldest of the three boys, 15 years old, had been employed as flagman of an extra gang. The foreman and two assistant foremen of the extra gang are held responsible for not enforcing the rule forbidding the use of handcars except in regular service; also "had the officials in charge exercised proper supervision" this derailment undoubtedly would have been prevented. The conductor had put the cars ahead of the locomotive over the objection of the engineman and the front brakeman. Had not the locomotive headlight been obscured by the cars ahead, the boys on the hand car would probably have seen the light in time to clear the track.

Pennsylvania and Rock Island, Chicago, August 29, 10.57 p.m.—Collision at the crossing of the Pennsylvania and the Chicago, Rock Island & Pacific at West 91st Street; northbound passenger train No. 182 of the Rock Island ran into an eastbound freight of the Pennsylvania, overturning the Rock Island locomotive and killing the engineman and fireman of that engine; also, 18 passengers and four employees were injured. Primarily, the cause was the negligence of the engineman of the Pennsylvania train in passing a stop signal without heeding it. This engineman admitted that he was engaged in conversation with the conductor and did not observe the interlocking signal at the crossing immediately before he passed it. The inspector believes that the signalman changed the route immediately in front of the Pennsylvania train.

There was a Wharton derail, but the locomotive was very heavy and the lifting rail did not raise the wheels over the south running rail, thereby forcing out the left (North) rail and allowing the engine to pass on to the crossing. The failure of the derail leads the inspector to doubt whether this type can be depended upon to function properly under such a heavy locomotive.

Wide World

French Car Cleaning Device

Cars are slowly pushed through a shed equipped with needle showers and revolving chamois skin brushes. Machine is said to do work of 160 car cleaners.

Communications and Books

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.*]

The New Accounting Classifications

TIBURON, Cal.

TO THE EDITOR:

I have followed with keen interest the articles and editorial comment appearing in the *Railway Age* concerning the proposed revision of the I. C. C. accounting classification.

How many others, like myself, are wondering just what is meant by the ever frequent comment on "cost accounting" or "cost finding"? Especially when mentioned as being included in the revised accounting classification.

Speaking from the standpoint of equipment maintenance, repair costs (cost accounting?) are vital to the officers of the mechanical department. Costs of certain classes of work; locomotive repair costs—per unit or per mile, etc.; passenger and freight equipment repair costs, etc. Similar unit costs are desired by officers of the maintenance of way and operating departments.

If "cost accounting" or "cost finding" has reference to items such as enumerated it has no place (in my opinion) in the I. C. C. accounting classification. If it has reference to maintenance, operating and traffic costs on a ton-mileage or car-mileage basis—for an entire system—it might properly be included in the classification but would seem to be of special interest to the accounting officers of the carriers as to the method of properly, or let us say, uniformly, determining such data.

This expression is prompted by the thought that while the classification is primarily the rule and guide of the accounting officer, it is also of considerable interest to all other department officers and department supervisors.

Possibly I am on the wrong track on this subject. If so, an article in the *Railway Age* by the editor or an officer of the R. A. O. A. will certainly be educational to the writer and possibly many others.

Further discussion on the revised classification (including "cost accounting") and depreciation charges will continue to be educational to many who are not familiar with the "inside" workings of these important subjects but, nevertheless, thoroughly interested therein.

C. F. FENNEMA,
Chief Clerk, Mechanical Department, Northwestern Pacific.

Collisions Involving Section Motor Cars

HAILEYVILLE, Okla.

TO THE EDITOR:

I have noticed an article or two on the above subject in the *Railway Age* of late. A large number of such accidents are caused by carelessness. Trackmen are like brakemen in that they do not like to flag.

I have been out on the track when a train passed and observed a foreman signaling the man in the cupola of the caboose to inquire if anything was following, while the man in the caboose would make a return sign which would indicate to the foreman that nothing was following. The foreman would then put his car on the track and start out. He might have a clear track to the point where he was going and he might meet a train a short distance from where he started. The man in the caboose thought he knew what was on the railroad but he did not. It is not reasonable to suppose that he would because meeting points are changed and trains started and turned back without notifying everybody on the railroad. There is only one safe course for a foreman to pursue and that is to flag on curves or follow immediately behind some train and use his judgment as to how long it will take this train to go to the next siding and for another to get out. Even that is not always safe.

There are times when a foreman can communicate direct with the train dispatcher and obtain a sort of a line-up to get him a few miles over the line but even at that the dispatcher does not know what will transpire on the railroad as far as the movements of trains are concerned. His line-up may not last ten minutes. In fact, I have known them not to last until he was through talking.

The operating department is sometimes to blame for section motor cars being struck by trains in this way. A foreman may have some material to unload or load and after making repeated requests for a car to be set or an engine furnished to do the work he becomes disgusted and starts to do the work himself with push cars. No one on the railroad is more conscientious in his work than the track foreman and his gang. While he is trying to forge ahead, trucking material here and there he meets with an accident, which, probably would not have happened if he had been furnished the proper help in the first place. So it is not always the first cost that is the greatest.

It seems to me that there is another important matter that could well be considered in connection with track cars. That is that there are many sections where a highway parallels the track only a few feet away. Instead of having these sections use the track cars continuously, furnish them with a light truck and let them use the highway to go to and from work and relieve the railroad track of that much congestion.

J. L. COSS.
Train Dispatcher, Chicago, Rock Island & Pacific.

The Air Line Limited, 1895

BOSTON.

TO THE EDITOR:

Your picture of the "Air Line Limited" (February 5, page 410) calls up memories of C. P. Clark, the "Ghost Train" and various other phases of railroad life—pleasing and otherwise—in Massachusetts and Connecticut in 1890-1905. That four-car train was the pride of all Southern New England, and the doings—the antics—of Clark, McLeod and others, the juggling with the Poughkeepsie bridge route and the Steamer Maryland, made heaps of copy for New York and Boston reporters.

When the New York, New Haven & Hartford, about 1895, secured control of the New England Railroad (successor to the New York & New England) but while yet the operation of the two former rivals had not been completely merged, it was deemed by the directors to be the part of wisdom to continue paying due respect to the dignity and independence of the weaker company; and one of the features in which this spirit was manifested was the promotion of through passenger traffic over the New England line; though the transfer of practically all of this traffic to the New Haven's Shore Line would have been easy.

In line with this policy, the "Air Line Limited" was put on between Boston and New York on October 21, 1895, by way of Willimantic, Conn., the first five-hour train between the two cities. Then, as now, the line through Willimantic was little, if any, better adapted to make the run in five hours than was either of the other two lines; but it was the shortest line, measured in miles, and for that reason was deemed a suitable field for the experiment. The train (westbound) started from the Park Square Station of the New Haven, in Boston, and appears to have been operated by the men and the locomotives of the New Haven company for the whole distance (in both directions). It traversed the Providence division of the New Haven as far as Islington, Mass., 12 miles from Boston, and thence ran over the New England line, about 75 miles, to Willimantic, where it entered the Air Line division of the New Haven.

This train began its career on October 21, 1895, as stated. It made a sensation by regularly passing through New Haven, both westbound and eastbound, without stopping. The only regular stop made by the train, for the first few months of its existence, was at Middletown, Conn., to change locomotives. The making of New Haven a way station was the subject of many manifestations of sympathetic sorrow in Hartford, as expressed by the newspaper humorists of the day.

The twin headlights of the locomotives made a mild sensation. The trains in both directions started at 1 p.m. and reached destination at 6 p.m. The idea of using these headlights is credited to C. P. Clark, who was president of the road at that time. The lights were so set on their base as to throw their rays in a slightly oblique direction, the idea being evidently to illuminate the track in advance a little better when approaching or traversing a curve. The right-hand light threw its rays to the left, and the left-hand one threw them to the right; so that the first impression on an observer, standing on the track in front of a coming train, was that a cross-eyed monster was approaching.

Your illustration shows the train while it was passing over the track tank and scooping water, near Putnam, Conn.

In 1902 the Air Line Limited was superseded by the Knickerbocker Limited, running by way of New London. N. E. P. A.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Iron and Steel Industry of the Calumet District—A Study in Economic Geography, by John B. Appleton. The first plant in this district was built to supply steel rails, and from this has developed a large industrial area the history of which is related in this volume. Transportation influences, both lake and rail, labor conditions, and marketing conditions including rates are discussed. 133 p. Pub. by University of Illinois, Urbana, Ill. $1.50.

Organization of the United States Government Outlined in Charts Reprinted from the United States Daily. Whether you are interested in the make-up of charts, or the Government or both, this publication will be helpful. 25 p. Pub. by Printing Corporation of America, Washington, D. C. 25 cents.

Periodical Articles

Construction Methods on the Moffat Tunnel, by R. H. Keays. Describes methods used up to August 1, 1925. Illustrated. Proceedings of the American Society of Civil Engineers, Feb., 1927, part 1, p. 163-209.

Depreciation and Valuation for Rate Control, by J. C. Bonbright. Discussion by Prof. A. A. Young, p. 345-349. Quarterly Journal of Economics, Feb., 1927, p. 185-211.

Railroad Changes River's Course, by J. Bernard Walker. Besides describing the Port Clinton cut-off of the Reading, this article also gives the fastest time ever made from Camden to Atlantic City—42 minutes. Scientific American, March, 1927, p. 178-179.

Railroads Eager for More Partners, by Charles E. Gradwell. Possibilities of financing by stocks. Savings Bank Journal, Feb., 1927, p. 33-35.

Union-Management Co-operation at Stratford, by Fred J. Cullum. "I am dealing now only with the Stratford Motive Power Shop on the Canadian National Railway; the Union-Management Committees in other shops may have different methods, but we find those adopted by us most suitable and successful." American Federationist, Feb., 1927, p. 171-177.

Electrificacion de la Rampa de Pajares. This study by the Spanish Northern Railway (Compañia de los Caminos de Hierro del Norte de España) presents the operating problems of its Pajares Gradient, and the results of electrification, and includes profiles, charts, and many fine illustrations. The Spanish text should not be difficult for anyone having a knowledge of Spanish and railroad terms, while the pictures, profiles and maps will be of interest even to those who have no Spanish. 135 p. Pub. by the Spanish Northern Railway Company, Madrid, Spain.

Looking Backward

One Hundred Years Ago

The State of Maryland, on February 28, 1827, granted a charter to the Baltimore & Ohio Railroad Company to construct and operate a railroad for the carrying on of a general freight and passenger business.

Fifty Years Ago

The order of the Chancellor of New Jersey appointing F. S. Lathrop as receiver of the Central of New Jersey fixes his bonds at $500,000. Mr. Lathrop has given notice through the general superintendent that he has made arrangements to pay the enginemen, firemen, brakemen, track hands and shop employees weekly and that he will apply for authorization to pay up all arrears in wages as soon as possible.—*Railroad Gazette*, February 23, 1877.

Holders of a majority of the first consolidated bonds of the Erie have given their assent to the plan of reconstruction and arrangements are being made to extend the third or standard gage rail from Waverly, N. Y., eastward to Binghamton, 41 miles, in order to secure the Albany & Susquehanna connection. This will enable the Erie to compete for New England business to better advantage, by running cars through between the Northwest and New England by this route, as they now do by the New York Central.—*Railroad Gazette*, February 23, 1877.

Twenty-Five Years Ago

The Supreme Court of the United States has declined to permit the State of Minnesota to bring suit before it to prevent the so-called merger of the Great Northern and the Northern Pacific railways, through the Northern Securities Company. The court held that it has no jurisdiction in the case.—*Railroad Gazette*, February 28, 1902.

The Chicago & North Western has closed a contract with John Alexander Dowie for the erection of a combination passenger and freight station at Zion, Ill. The company has been leased the right to use the ground free of rental until the year 3000, providing a number of covenants are observed. An attempt was made on the part of Dowie to prevent the company from carrying pork or oysters.—*Railway Age*, February 28, 1902.

It is not many years since any activity on the part of a railway official in the way of speaking at clubs or before societies, or writing articles for the press was frowned upon by the generality of his associates. Any high official who made any public expression of his views on railway topics, except to bitterly denounce public and legislative interference, was looked upon as "one of those theoretical fellows." Recent official promotions have demonstrated how completely that idea has passed away.—*Railway & Engineering Review*, March 1, 1902.

Ten Years Ago

E. E. Loomis, vice-president of the Delaware, Lackawanna & Western, has been elected president of the Lehigh Valley.—*Railway Review*, February 24, 1917.

A special meeting of the Chicago Railway Special Agents and Police association, comprising secret service men of most of the railways radiating out of Chicago, was held on February 10 for the purpose of discussing plans for the protection of railroad property in the event of war. Many of the railroads in all parts of the country on their own initiative have already established a night and day guard over stations, roundhouses, power plants and bridges.—*Railway Age Gazette*, February 23, 1917.

Odds and Ends of Railroading

The terms "cow-catcher" and "auto-catcher" are both obsolete, according to another correspondent of the Chicago Daily News. He suggests that it should be "sky-pilot."

The cabin of an ocean liner, the Canadian National Railways Magazine says, is the safest place in the world and a berth in a sleeping car is next. "Stay home if you must," it adds, "but remember, you do so at your own risk."

There is no telling, when copy goes to the linotype machine, how it will come back, particularly in the high speed work of a daily newspaper. Referring to a prominent operating officer recently, the compositor on a Chicago daily conferred upon him the rather unusual title of "instant general manager."

An Associated Press dispatch from Smethport, Pa., says that "the 'rainy day' railroad, which for a time ran only on wet days to avoid danger of forest fires being caused by engine sparks, is threatened with extinction." Bus competition, not an excess of dry weather, is given as "the cause of commercial defeat." This apparently refers to the Mt. Jewett, Kinzua & Riterville, running from Smethport eight miles to Backus, Pa., where it connects with the Buffalo, Rochester & Pittsburgh.

According to Earth Mover, a man is something that can see a pretty ankle three blocks away while driving a motor car in a crowded city street, but will fail to notice, in the wide open country-side, the approach of a locomotive the size of a schoolhouse and accompanied by a flock of 42 box cars. We might also add, in this connection, that man is something that can hear a complimentary remark about himself if it is whispered in the far corner of the room, and cannot hear the warning note of a locomotive whistle with hundreds of pounds of steam behind it.

It is strange that a subject so adaptable to musical treatment as railroading has not more of a musical literature. Except for the three immortals: "Casey Jones," "Workin' on the Railroad," and "Wreck of Old 97," there are few typically railroad songs that have attained any lasting popularity. Of course, there is a host of "mammy" songs, many of which say something about "midnight choo-choos" and "red-haired conductor men," but they hardly count. Some years ago it was reported that a famous European composer was working on a railroad symphony, but it has not materialized.

Colors and Names for Locomotives?— "Amen" Says One, "Pooh, Pooh," Says Another

The editorial in the New York World advocating names and gaudy colors for locomotives, which we quoted in part in this department in the February 19 issue, has met with varying response. We quote excerpts from two letters to the editor of that paper:

"The editorial in the World, February 16, on the subject of our locomotive greyhounds suggests a plan for adding to the attractiveness of rail travel generally. I hope we can consider it the first move in an active campaign for their suitable naming and decoration. On England's main-line railways the engines are all appropriately labeled, Sir Galahad and his brother Knights of the Round Table all being represented, as well as many famous soldiers and statesmen. Americans traveling in Britain like the idea. You find them walking to the forward end of the platform before train time, making note of the locomotive's monniker and chatting with the proud skipper on the fine points of his charger. The remarkable aspect of the idea is in the failure of our roads to adopt so rich a source of good-will."

Another letter is in a different vein:

"Into the face of the editorial writer who wrote that piece about 'The Giant Locomotive' I herewith fling my glove. 'The locomotive lacks a soul,' says the World, February 16. If by soul you mean any of these—personality, expression, grace, beauty or speech—then it seems clear that you are barking in the wrong forest. What machine could have more attributes of conscious, articulate life? In action the locomotive is a charging steed with snorting nostrils, flaming belly, smoking mane and ribs of steel. At rest he is an autocrat of poise, symmetry and fierce, dark aplomb. When he speaks, his words have the beauty of flames and the force of steam and steel. You suggest that this god from Valhalla be given the name of a brother Elk and splashed with gay colors. What effrontery! Why take this superb, sable creature and smear him with Coney Island paint? Why slap this majestic divinity on the back and call him 'Bill' or 'Gus'? Why reduce another giant to the level of George F. Babbitt?"

"Anon" Is Paul J. Powers

In this department on February 5 we published some verses entitled "To the Old Guard" and, not knowing the author, ascribed them to "Anon." It now develops that these lines were written many years ago by Paul J. Powers, chief clerk to the engineer maintenance of way of the Delaware & Hudson, and originally appeared in the "Bulletin," a publication issued in connection with the old D. & H. maintenance of way association. Another poem from Mr. Powers' pen, entitled "The Section Foreman's Dream," follows:

The Section Foreman's Dream

Extra Seven-four-six went into the ditch
At the switch there just south of the tower,
Put the engine and tank
And ten cars down the bank
And held number eight for an hour.

They called us all upon the carpet,
The G. M. was sore it would seem,
Thought they'd give me the walk
Till they started to talk
Then I knew it was only a dream.

With his hand on the engineer's shoulder
The train master said with a sigh,
It was not a low joint
Or a battered switch point,
He was taking the "puzzle" in high.

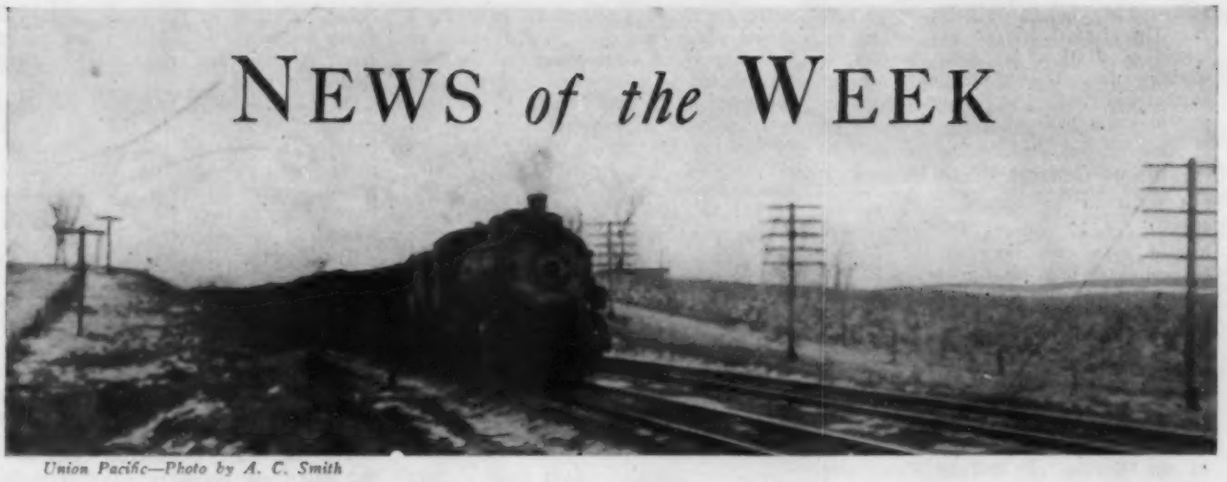
Then the engineer said with conviction,
I can prove by the man in the tower
When he gave me the ball
I was rocking them all
And rolling them sixty an hour.

Next spoke the division car foreman,
As he stepped to the front with a frown,
It was not caused by speed,
For that gon in the lead
Clearly proves 'twas the brake rigging down.

The master mechanic yelled loudly,
If you'll let me I'll prove in a jiff
My department's to blame,
I acknowledge with shame
That the engine was rigid and stiff.

I'm not much at visions or dreaming,
It's seldom I sleep on my back,
I can side-step and scheme,
But it sure is a dream
When they don't put the blame on the track.

NEWS *of the* WEEK



Union Pacific—Photo by A. C. Smith

HYWEL DAVIES, a member of the United States Board of Mediation, died at a hospital at Washington, D. C., on February 17.

THE CAR FOREMEN'S ASSOCIATION of St. Louis will hold its next meeting on March 1. There will be a general discussion of the A. R. A. rules.

THE CLEVELAND RAILWAY CLUB will hold its next meeting on March 7, at the Hotel Hollenden. There will be a discussion of the changes in the A. R. A. mechanical rules.

THE CANADIAN RAILWAY CLUB will hold its next meeting on March 8, on which occasion a paper will be read on "Railway Mail," by P. T. Cooligan, deputy postmaster general, Ottawa.

THE COLORADO LEGISLATURE has passed House Bill No. 53, which authorizes the state highway department to enter into contracts with railroad companies for grade separation work.

JAMES M. THOMPSON, member of the Idaho Public Utilities Commission, has been named president of that body succeeding Will H. Gibson who has been reappointed to the commission for a term of six years.

FOR THE FISCAL YEAR ended March 31, 1927, the amount which Parliament was asked to vote to the Canadian National was $31,600,000, while the main estimates tabled in the House last week showed that the request for the fiscal year ending March 31, 1928, is over $9,000,000 less, or $22,500,000.

FOLLOWING PASSAGE by the House of Commons of the bill to ratify the agreement between the Canadian government and the Grand Trunk Pacific debenture holders in London, Eng., whereby the latter are to have their claims adjusted the bill was before the Senate last week and was given second reading which means its final passage there without opposition.

DANIEL WILLARD, president of the Baltimore & Ohio, called on President Coolidge on February 21 to invite him to attend the centennial celebration of the beginning of the railroad at Baltimore on September 17. Mr. Willard said that plans are being made to present as a feature of the centennial a pageant illustrating the evolution of the railroad industry since that early stage of its development.

THE ANNUAL DINNER of the Traffic Club of New England was held at the Copley Plaza Hotel, Boston, on the evening of February 17. George L. Graham, president of the club, was toastmatser and the dinner was largely attended by shippers and railway men from all over the country. Speakers were Samuel O. Dunn, editor of the *Railway Age,* whose subject was "What Kind of Railways Do We Want?" and Captain O'Hay, famous as a soldier of fortune.

THE BOSTON & MAINE has agreed with its enginemen and firemen, who object to recent changes in locomotive runs and other things, to refer the questions at issue to arbitration. D. S. Brigham, assistant general manager of the road, representing the company, and S. H. Huff (B. of L. E.) representing the enginemen and firemen, will select a third arbitrator; or in case of their failure to do so, in accordance with the law, a third man will be named by the mediation board at Washington.

Western Railway Club Meeting

Three papers were presented at the February 21 meeting of the Western Railway Club, held at the Hotel Sherman, Chicago. F. T. Singleton, public service commissioner of Indiana, discussed the subject of safety from a public officer's standpoint, pointing out that a substantial proportion of highway crossings can be eliminated by diverting highways which cross and recross railroad tracks within short distances. He said that the railroad organizations of the nation should act as a unit and lead in a national movement to promote safety. L. N. Cobb, representing the Ball Watch & Railroad Time Service, presented a paper, illustrated by lantern slides, on the history and development of the modern watch, with particular reference to its use in railroad service. G. A. Richardson of the Bethlehem Steel Company described a century of car manufacture, dwelling in the main on mass production as applied to freight cars. A moving picture of the construction of all steel, wood lined A.R.A. standard box cars shown in this connection.

Land-Grant Investigation

The joint Congressional Committee that has been investigating the Northern Pacific land grants, after holding numerous hearings and received briefs from both the railway and the Forest Service, has decided that it is impracticable to give final consideration to the question in the few remaining days of this session of Congress, and the House committee on public lands has reported a resolution providing for a continuation of the committee. The resolution also directs the Secretary of the Interior to withhold until June 1, 1928, his approval of the adjustment of the land grants.

Recommend Increase for Canadian Clerks

Recommending an increase in wage rates of 4 cents an hour to employees paid on this basis and a corresponding increase to those paid by the month the board of conciliation named to deal with the dispute between the Canadian Pacific and certain classes of employees, including clerks, freight handlers, station and store men, members of the International Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, has submitted its report to the Minister of Labor, at Ottawa. About 5,000 men are affected.

Western Trainmen Ask Increase

The general chairmen of the Order of Railway Conductors and the Brotherhood of Railroad Trainmen on Railroads in the territory west of Chicago, have asked for increases in wages for conductors, trainmen and yardmen equal to 7½ per cent of their present wages, which is equivalent to that granted the same class of employees in the east, at a meeting with the Conference Committee of Managers of Western

Railways at Chicago on February 23 and 25. The original demand was for an increase of $1.00 a day with changes in working rules. During the conference the request was changed to 7½ per cent of the present wages received.

Illinois Central Prize Essays

A total of 12 men and 27 women students of 39 colleges and universities located along the lines of the Illinois Central, have been awarded prizes of $50 each in the system's contest on "The Place of the Railroads in the Life of the American People," which was described in the *Railway Age* of February 5. These winning essays have been entered in the competition for the grand prize of $100 which will be awarded upon the combined votes of Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, Washington, D. C.; Samuel O. Dunn, editor of the *Railway Age*, Chicago; and James M. Thomson, publisher of the New Orleans Morning Tribune and Item.

Brainerd Confirmed I. C. Commissioner

The President's latest appointment to the Interstate Commerce Commission, that of Ezra Brainerd, Jr., of Muskogee, Okla., went through the Senate without opposition, in marked contrast to the experience of his preceding two nominations. The nomination was made on February 16, was considered by the committee on interstate commerce on February 17, and was confirmed by the Senate immediately afterward. Mr. Brainerd is a Republican, was born in Vermont in 1878, was educated at Middlebury College, Colgate University and the University of Michigan, and from the latter was graduated in law in 1904. He has practiced law at Muskogee for some 20 years and has been vice-president of the First National Bank of that city.

Relief Map of Missouri Pacific

What is probably the largest relief map in the United States is being exhibited by the Missouri Pacific at the International Trade Exhibit in New Orleans, La. The map, which is 60 ft. by 40 ft., is built in four sections and required four freight cars for its transportation. It shows the whole United States but the only railroad lines indicated are those of the Missouri Pacific. These are shown in detail, and along each line are illustrations of the natural resources of the territory served. Mines, farming industries and other business enterprises are indicated. Miniature electric trains run over the lines of the company so that the scope of its transportation service may be visualized. The map is surrounded by an elevated platform so that visitors may view the exhibit from above.

Investigate New Peace River Outlet

The construction of a direct rail route to Pacific coast ports from the Peace River district in Canada was referred to the committee on railways and canals following a debate which took place in Parliament on February 14 on a resolution that the railway should be commenced forthwith and completed in the near future. C. A. Dunning, minister of railways, said that according to the report of the engineers investigating this project (which report was abstracted in the *Railway Age* of December 18, 1926,) the construction should not be undertaken immediately, but should be referred to the committee of the House dealing with railways and canals in order that officers of the railway may be called before that committee and justify their proposals for the construction on economic grounds.

Club for N. Y. C. Supervisory Officers in Albany District

The "New York Central Lines Club of the Capitol District" is the title of an association which was organized at a dinner in Albany, N. Y., on Tuesday evening, February 15, by about 350 supervisory officers of the New York Central in Albany and vicinity, the purpose being to establish a club for social and educational purposes. The chairman of the meeting was G. A. Reed, assistant master mechanic of the Mohawk division. The principal speaker was W. H. Flynn, general superintendent of motive power and rolling stock. Other speakers were R. M. Brown, M. W. Hassett, G. B. Usherwood, L. H. Albers, R. B. Elsworth, W. P. Davis, W. F. Jones, J. G. Parsons and C. M. Thomas.

The following officers were elected: President, F. J. Lyon; first vice-president, George P. Fox; second vice-president, B. A. Dayton; secretary, J. E. Thompson; treasurer, H. W. Fox.

Heavy Flood Damage in California

Excessive rainfall in southern California on February 11 to 15 resulted in the death of one person and injury to several others when the Eastbound Los Angeles Limited of the Union Pacific was wrecked on February 15, one-half mile west of Clayton, Cal., and 14 miles east of Los Angeles. As the train was crossing a steel bridge over San Jose Creek the structure collapsed, resulting in the death of the engineer and minor injuries to a few passengers. A temporary bridge was completed on February 20.

On the San Pedro branch of the Union Pacific, three bridges over the Los Angeles river were weakened and operations suspended until February 20. On the Rialto branch between Riverside, Cal., and Crestmore, a bridge over the Santa Ana river was partly washed out.

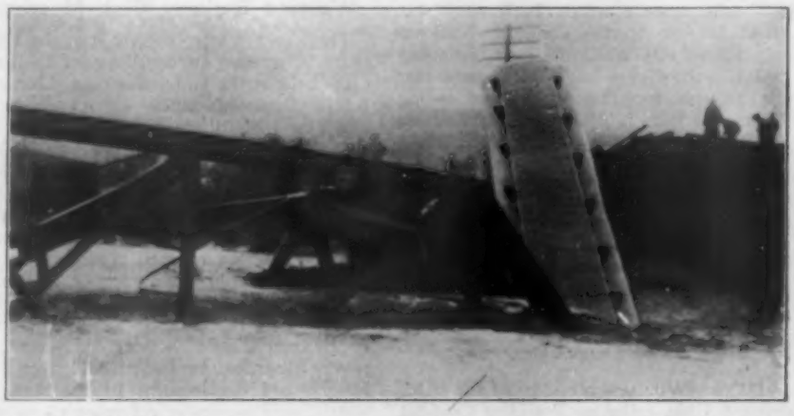
The Atchison, Topeka & Santa Fe and the Southern Pacific also experienced washouts at several points on their lines. The tracks in some places were submerged under two feet of water.

I. C. C. Compiling Its Statutes and Decisions

The Interstate Commerce Commission announced on February 23 that it has undertaken the compilation of the various acts which it administers, and related acts, with annotations covering pertinent decisions of the courts and the commission, as requested by the United States Senate in S. Res. No. 334, proposed by Senator Hawes. The investigation for convenience will be known as Docket Ex Parte No. 89. The commission has designated Commissioner Aitchison to take charge of the administration of the resolution and the compilation and annotation of the statutes called for by the Senate, and he will proceed as rapidly as feasible. As far as possible the work will be done by the present forces of the commission. The commission will be glad to receive and consider any suggestions as to the scope of the work or intended to be helpful to it in the great amount of labor involved. Communications may be sent to Commissioner Aitchison directly or to the secretary. The Senate resolution referred to was proposed by Senator Hawes of Missouri.

Short Lines Still Claim Government Unjust

Petitions were filed with the Interstate Commerce Commission on February 10 on behalf of 27 "short line" railroads asking for a reopening of the proceedings on their applications under section 204 of the transportation act for the reimbursement



Underwood & Underwood

Flood Damage to Bridge Resulting in Derailment

of deficits for part of the period during which the government operated the railroads in 1918-1920. The law provides for a reimbursement of deficits for that part of the federal control period after many of the short lines were relinquished by the government and there have been controversies in the cases of many of the roads as to whether they were or were not under federal control for parts of the period. The 27 roads are among those that the commission held were not under federal control during approximately the first six months of 1918; but they now ask reconsideration of their cases on the ground that they were in the same status as that of the Marion & Rye Valley, which after much litigation obtained a decision from the courts that it was under federal control and therefore entitled to compensation.

Signal Section Program

The Signal Section of the American Railway Association on Monday forenoon, March 7, the first day of its meeting at Chicago, will hear and discuss the reports of the committee on mechanical interlocking; the committee on designs; and that of Committee IV on d.c. automatic block signaling. The morning session will consider also the joint work of the d.c. and the a.c. automatic block signal committee. The program for Monday afternoon and Tuesday morning is as follows:

MONDAY AFTERNOON

Committee XII—Performance Records.
Committee V—Instructions.
Committee VII—Contracts and Valuation.
Committee XI—Chemicals.
Committee I—Economics of Railway Signaling.
Adjournment.

TUESDAY MORNING

Committee III—Power Interlocking.
Committee X—Signaling Practice.
Special Committee on Highway Crossing Protection.
Committee VIII—Alternating Current Automatic Block Signaling.

On Tuesday afternoon motion pictures showing the operation of car retarders will be shown.

Moffat Tunnel Holed Through

At 8 p.m. on Friday, February 18, the last barrier between the east and west headings of the pioneer bore of the Moffat tunnel was removed by a charge of explosive fired by an electric spark caused by the pressing of a key by President Coolidge transmitted by wire from Washington. Measurements for distance showed that the calculated length of the tunnel had been carried out with a high degree of accuracy and that the determination of alinement and grade had been made with exceedingly small error.

The completion of the Moffat tunnel, 6.1 miles long through the continental divide on the line of the Denver & Salt Lake, will effect a reduction in distance by railroad of approximately 23 miles; will reduce the summit elevation of the line by 2,420 ft., and reduce the maximum grade from four per cent to two per cent. The driving of the tunnel has been conducted as a public work through the agency of the Moffat Tunnel Commission created by statute. The tunnel will be used by the railroad under a lease requiring it to transport automobiles and other highway vehicles through the tunnel.

The Moffat tunnel project has been undertaken as a means of obtaining better rail communication between Denver and the northwestern portion of Colorado and to obtain a more direct route between Denver and Salt Lake City. One plan to this end is the extension of the Denver & Salt Lake, while another is to construct a 41-mile cut-off from Orestod, Colo., on the Denver & Salt Lake to Dotsero on the Denver & Rio Grande Western, whereby a route would be obtained which would be 173 miles shorter than the present route over the Denver & Rio Grande Western. It is expected that the tunnel will be ready for use in July.

Miners' Union Asks Congress to Investigate Coal Rates

Officers of the United Mine Workers have sent a petition to members of the Senate and the House of Representatives asking Congress, through appropriate committees, to investigate "the relation of freight-rate discrimination to the extreme depression of the coal industry of Indiana, Ohio, Pennsylvania and Illinois and the adequacy of existing law to afford relief." Congress also is asked to take whatever action may be necessary to put an end to the "unjust discrimination" complained of and to "protect the interests of the coal producers and consumers as well as the railroads which depend on this traffic." Nothing is said in the petition about protecting the higher wage scales paid to the miners in the districts which are said to be suffering.

The Interstate Commerce Commission has just completed an exhaustive investigation of all the rates mentioned in the petition in the lake cargo coal rate case, but the miners' language indicates some dissatisfaction with the commission's last decision in that case. The petition is said to have been approved by unanimous vote of the delegates to the recent annual convention of the United Mine Workers at Indianapolis. It was put into the Congressional Record by Senator Robinson of Indiana and referred to the Senate committee on interstate commerce. It states that the coal fields of Pennsylvania, Ohio, Indiana and Illinois are located nearest to the great coal-consuming markets and shipping points and are therefore entitled to "the advantages of their superior natural location," but have been "virtually driven out of their natural markets and thrown into a condition of extreme depression by an unjust and unreasonable freight rate policy," which has favored the long-haul coals by granting to them "relatively lower rates."

M. J. Gormley Discusses Hand-to-Mouth Buying

The Policy Holders' Service Bureau of the Metropolitan Life Insurance Company held a conference of new policy holders in Chicago on February 17, which was devoted to a discussion of the effect of hand-to-mouth buying on business practices. Among those addressing the meeting was M. J. Gormley, chairman of the Car Service division of the American Railway Association, who contended that the unparalleled efficiency of transportation in the last few years has been the secret of the success of the widespread practice of the so-called hand-to-mouth buying which has featured commerce in this country since 1923. Better transportation, as evidenced by the fact that 53,000,000 cars were handled in 1926 without car shortage or congestion, has enabled shippers and distributors in all branches to reduce their stocks of materials and supplies to current needs. There is no reason, he showed, why this condition need be changed, as far as transportation is concerned, because the railroads are in a position to maintain their service to shippers with all the efficiency that characterized operations during the past year. Other speakers at this meeting included E. F. DuBrul general manager, National Machine Tool Builders Association, and W. C. Carroll, vice-president of the Inland Steel Company. Both Mr. Carroll and Mr. DuBrul pointed out that while hand-to-mouth buying has been a great factor on the whole in stabilizing business, it has forced upon producers the necessity of carrying some of the stocks which were previously carried by the consumers.

Entrance Wye to Union Station, St. Louis, Mo.

Traffic

The Pacific Coast Transportation Advisory Board will hold its next meeting on March 13 at Phoenix, Ariz.

The Senate committee on interstate commerce on February 18 reported favorably to the Senate without amendment the Newton bill, H. R. 12,065, which was passed by the House at the last session of Congress, containing numerous amendments to the interstate commerce act recommended by the Interstate Commerce Commission and the National Industrial Traffic League.

The Industrial Department of the Chesapeake & Ohio reports that during the year 1926, new business concerns established in the territory along its lines numbered a total of 322; and 27 plants increased their capacity from 10 to 300 per cent. Four plants, idle previous to January 1, 1926, either resumed operation or are preparing to do so shortly, and five plants which were destroyed by fire during that year have been rebuilt on the same or a larger scale.

A committee was formed at a meeting of shippers and carriers at Minneapolis, Minn., on February 19, to work out a plan for the readjustment of the freight rates which were established in 1925 by the Interstate Commerce Commission in the Fargo and Watertown cases. The committee will hold its first meeting on March 7 at the state commission offices. J. B. Campbell of the Interstate Commerce Commission, at whose request the meeting was held, explained that the conference was entirely informal.

A comprehensive study of the freight rates affecting automobiles and parts, their classification and their relation to rates on other commodities, to be undertaken by the traffic department and the traffic managers' committee of the National Automobile Chamber of Commerce, has been authorized by the directors of that organization, for the guidance of the traffic department, and of members, in connection with the Interstate Commerce Commission's investigation of rates on iron and steel articles between points east of the Mississippi river.

The Pennsylvania announces that its ferry across the Delaware river, the Philadelphia & Camden Ferry Company, will, on March 27, adopt a single flat rate of 25 cents for the transportation of passenger automobiles and taxicabs, including their occupants. The graduated rates now in effect have brought in an average about 32 cents a vehicle. The new rate is the same as that over the Delaware river bridge, and it is hoped to attract to the ferry boats sufficient patronage to warrant the continuance of the present frequent service.

The Interstate Commerce Commission has issued a decision affirming, after reargument, the finding in its former report that the proposed elimination of the Salt Lake & Utah as an intermediate participating carrier in the routing of westbound transcontinental traffic was justified and that the refusal of the defendant transcontinental lines to include it as an intermediate participating carrier in the routing of eastbound transcontinental traffic was not unreasonable or otherwise unlawful. "The record is clear," the report says, "that the inclusion of protestant's line in the transcontinental routes can benefit no one except protestant and can add nothing to transportation facilities. It will result rather in inefficient and uneconomical operation, upon which we are unwilling to place our stamp of approval." Commissioners Aitchison, Campbell and Eastman and Chairman Esch dissented.

Average Car Mileage and Car Load for 1926

The daily average movement of freight cars in the United States in 1926, according to reports for the year compiled by the Bureau of Railway Economics, was 30.4 miles a day. This exceeded by 1.9 miles the average for 1925 and by 3.6 miles the average for 1924.

The average showed a progressive improvement throughout the year, the highest average for any one month on record having been attained in October, 1926, when it was 34.2 miles per day. This speeding up in the handling of freight cars was due not only to the more prompt movement of both loaded and empty cars by the railroads but also to the more prompt loading and unloading of freight cars by shippers.

The average load per freight car in 1926 was 27.4 tons which was four-tenths of one ton greater than that for 1924 or 1925. It was, however, one-half a ton below the average for 1923.

Record Freight Traffic in 1926

Class I railroads in 1926 handled 488,577,875,000 net ton miles of freight, according to reports for the year just compiled by the Bureau of Railway Economics.

This exceeded by 30,971,215,000 net ton miles, or 6.8 per cent, the best previous record for any year which was established in 1923. It also exceeded by 32,490,643,000 net ton miles, or 7.1 per cent, the total for the corresponding period in 1925.

In the Eastern district there was an increase of 9.4 per cent in the amount of freight traffic handled in 1926 compared with 1925, while the Southern district showed an increase of 6 per cent. The Western district reported an increase of 4.4 per cent.

Class I railroads in December also handled the greatest freight traffic for any December on record. This amounted to 40,095,509,000 net ton miles, an increase of 2,239,362,000 net ton miles, or 5.9 per cent, over the previous high record for that month which was established in 1925.

In the Eastern district, the volume of freight handled by the railroads showed an increase in December of 10.3 per cent over that of the same month in 1925, while in the Southern district there was a decrease of eight-tenths of one per cent. The roads in the Western district reported an increase of 2.4 per cent.

Canadian Rate Investigation

The rates on grain and grain products to Vancouver for export stand at the present time on a level generally lower than that in effect in the early part of 1914, declared George Stephen, Assistant Freight Traffic Manager of the Canadian Pacific, in the equalization rate case before the Dominion Railway Commission last week. Where other export rates to Vancouver were higher than in 1914, Mr. Stephen added, the difference is comparatively small.

The witness dealt in some detail with the making of freight rates from Vancouver and other British Columbia shipping points eastward, and said that the general policy of the railways had been to flatten out the rates on long-haul traffic particularly to points in Manitoba and Eastern Canada where the British Columbia shipper has competitive commercial conditions to contend with. He said that rates on a number of important commodities had been established as the result of negotiations with shippers actually interested who realized the necessity for the policy adopted by the railways if the shippers were to be able to compete in common markets with the manufacturers of Eastern Canada and of the United States.

In a general review of recent freight reductions Mr. Stephen dealt specially with the tariffs on live stock and quoted figures to show how, following the reductions in rates, this class of business had increased. He stated for example that from 1922, when the reduced rates on live stock were coming into force, until 1925 the number of cars of cattle, hogs, and sheep shipped from and through the union stockyards at St. Boniface, Manitoba, to Eastern Canada rose from 9,172 to 13,928. In 1926 the number of carloads similarly shipped was 11,049 but this, he said, was largely accounted for by a decrease in the export movement of cattle to Great Britain.

Mr. Stephen gave to the board an analysis of freight schedules to illustrate the difference between prairie and mountain rates. At the present time, he stated, the basis of these rates was a mile and a quarter in the mountains for a mile on the prairies; but this did not work out at twenty-five per cent higher than the prairie standard, but at about fifteen per cent. In support of this statement Mr. Stephen compared the class rates in the mountains and on the prairies for mileage groups running from twenty-five up to three hundred miles. Taking the total of the rates per one hundred pounds for the five first classes, he calculated that the differences between the prairies and mountain rates ranged from 12.1 per cent at a hundred and fifty miles to 16.9 per cent at three hundred miles.

Foreign Railways

Czechoslovak Railways Reflect Industrial Depression

The critical situation of a number of Czechoslovak industries has been reflected in the operations of the State Railways, according to advices from Consul C. F. Winans, Prague, made public by the Department of Commerce. According to the latest available statistics, that is, up to the end of October, 1926, a marked decline in freight transportation is apparent, although an increase is to be noted in the transportation of passengers.

Total receipts up to the end of October, 1926, are estimated at 3,166,000,000 crowns, of which 741,000,000 crowns constitute receipts from passenger and baggage transportation, and 2,425,000,000 crowns, from freight transportation. Compared with similar statistics for 1925, there was an increase of approximately 21,000,000 crowns in the returns from passenger transportation, but a decrease of 76,000,000 crowns in the freight receipts. It is expected that the complete returns for the year will show an even greater decline in the freight receipts.

Czechoslovakia Plans Private Operation

The Czechoslovak government, according to a dispatch from Prague to the Wall Street Journal, has rejected the proposal of a foreign financial group for a lease of the State Railways. Another proposition, however, somewhat similar, is reported to be under consideration. This plan would call for the formation of a private company with a capital of 20 billion crowns to take over the roads. Of this capital 11 billion would be advanced by the state, 6 billion by foreign interests and 3 billion by Czechoslovak capitalists.

The new company would have to conform to the following conditions: (1) The commercial management to rest with the private capital; (2) the state to undertake to agree to all decisions of the management which tend to increase economic efficiency; (3) no increase in the tariffs to take place so long as the index figures and coal prices remain stationary (allowing, however, for fluctuations up to 15 per cent)—tariffs to be reduced if index and coal prices drop, and any tariff alterations to be subject to the sanction of the government; (4) the state to have the right to take over the management in case of war; (5) the company to be taxed only on the net profit exceeding 10 per cent of the capital invested, such taxes not to be higher than 25 per cent.

Further Electrification on Paulista

The plans of the Paulista Railway in Brazil call for the completion this year of the electrification from Rio Claro to Rincao, the end of the broad gage line. This extension of 152 kilometers will bring the total of the electrified line to 286 kilometers, or 177 miles. The Paulista is the first steam road in Brazil to replace steam locomotives with electric. The change over has been made one section at a time during the past five years. The first electric operation was started in 1921 from the terminal point Jundiahy to Campinas, a distance of 44 kilometers, with substation apparatus and locomotives furnished by the International General Electric Company. In 1925 the electrified zone was extended 50 kilometers from Campinas to Tatu, and last year another 40 kilometers was added from Tatu to Rio Claro. For both of these extensions the I.G.E. supplied the substation equipment. General Electric locomotives in service on the road now include 8 for freight, 4 for passenger service, and 9 for switching, a total of 21.

For the electrification of the final section from Rio Claro to Rincao, the International General Electric Company will supply equipment for two substations and three 145-ton passenger locomotives, and Milliken towers with Locke insulators of Hewlett suspension type for double transmission line.

The original substation is of 4,500 kilowatts capacity, and all of the others 3,000 kilowatts. The Paulista Railways serve a coffee-producing area to the northwest of Sao Paulo. Its terminal, Jundiahy, is about 60 kilometers inland from that city, and connects there with the Sao Paulo Railway, which is the connecting link with the port city of Santos.

Suggested Improvements for Railway Service to Near East

At the railway convention recently held at Baden-Baden, Austria, means of improving the service of European trains, as well as various points affecting the reorganization and extension of the Simplon Orient Express railway service, were discussed, according to Commercial Attache Julian E. Gillespie, Constantinople, in a report to the Department of Commerce. Changes and suggestions brought up included, among other things, the shortening of time for trips on the Simplon Orient Express, and increase in the number of its trains; the establishment of a direct railway service between Saloniki and Constantinople.

The delegates of the Anatolian, Bagdad, and Cilician railways, who for the first time assisted at an International railway convention, requested that the Simplon Orient Express railway service be extended beyond Constantinople and the Bosphorus to Palestine and Egypt, by way of Eski-Shehir, Konia and Aleppo. In this connection they suggested the construction of a railway bridge to connect the West coast of the Bosphorus with the Asiatic coast; or, the construction of a submarine tunnel; or, the use of a large ferry which would transport the trains across the Bosphorus from the west coast to the Asiatic littoral. The convention favored the extension of the Simplon Express service, and it was agreed that a definite decision in this respect would be taken at the next convention which was to be held in January, 1927, at Florence, Italy.

It is reported that the new traffic schedule, shortly to be put into effect on the Simplon Orient Express line, contemplates reducing the travel time between Paris and Athens by 2½ hours. In addition to the first-class sleeping cars which are operated on trains between Athens and Paris, it is intended to provide these trains with one second-class sleeping car.

One of the principal recommendations of the convention was the establishment of a direct railway service between Saloniki and Constantinople, by way of Kuleli-Biurgas. The travel time of the trip between Saloniki and Constantinople will be reduced from 40 to 25 hours. An express train with sleeping cars for the entire trip is planned.

Miscellaneous

The Department of Commerce has received the following reports from its agents in various parts of the world:

Negotiations for the building of a railway from Port Fuad to Bagdad to pass through Haifa, are being carried on between an English company and the Egyptian, Palestine and Iraqian governments. Teheran may be linked up, if the Persian government is amendable to the suggestion. An alternative scheme is to run the railway to El-Arish, and thence, via Beersheba and Hebron, to Jerusalem and Amman, Kaf, Rutbah springs, Kerbela and Bagdad. The Port-Fuad Haifa line would run along the coast to Jaffa, Tel-Aviv, Haifa, Beisan and across the Valley of Jezreel to Amman. In the event of an agreement, work will commence next spring.

Franchise to build a railway in Fukien province (China) has been obtained from the Peking Central government by Guang I-chu, a native of Changchow. According to the report the railway is to be in three sections, the first to run from Amoy to Foochow, via Changchow; Hsienyu, and Hsinghua; the second from Amoy to Changchow; and the third from Amoy to Tingchow, via Lungyenchow. As there is already a railway line between Amoy and Changchow, it is supposed the plan is to take over this line and incorporate it into the new system. It is said that Mr. Huang has agreed to raise an amount of $10,000,000 Mexican, of which an amount of $4,000,000 has already been guaranteed by Mr. Huang and his friends.

Direct freight traffic between Germany and Russia was established on January 1, 1927. Up to this time freight traffic between Russia and Germany had been organized only with regard to rates for routes via the border states. If the route via Poland was chosen reshipment through an agent on the German-Polish or Polish-Russian frontiers was required. Of the Russian railroad stations only the more important ones have so far been listed in the new tariff, in all about 250. On the German-Polish frontiers all crossings can henceforth be used at a shipper's option

for traffic between Germany and Russia, whereas on the Polish-Russian frontier only a certain number of crossings are open for that purpose. Freight rates and other charges are calculated in U.S. dollars on the basis of the tariffs in force in either country, whether inland or international tariffs. The freight may be transferred to the consignee for collection or prepaid. C. O. D. payments are permitted in the currency of the country of delivery. Express freight is prohibited. Owing to the broad-gaged railway system in Russia the shipments will have to be reloaded on the Polish-Russian frontiers.

New motor services to feed the Irish railways will be established by the Great Southern, according to press announcements. Three such services, each covering about 20 miles, have since been inaugurated, and several others are being contemplated.

The most prominent feature of the financial plans of the government general of Chosen for the fiscal year beginning April 1, 1927, approved by the cabinet council at Tokyo, but subject to the final approval of the Imperial Diet, is a new railway building program calling for the expenditure of 320,000,000 yen during the next 12 years, according to advices from Consul General Ransford S. Miller, Seoul, made public by the Department of Commerce. This amount is understood to include the 90,000,000 yen still required for the completion (in 1932) of the present program leaving some 230,000,000 yen to be expended on the construction of new railways and the purchase, at a cost of approximately 25,000,000 yen, of the five principal private railways in Chosen.

The Bolivian Government has announced that it has contracted with a firm in Argentina for additional construction work on the Atocha Villazon Railroad, at an approximate cost of $1,000,000, states Minister Jesse S. Cottrell, La Paz, Bolivia, in a report made public by the Commerce Department.

On the Erie at Corning, N. Y

Equipment and Supplies

Locomotives

THE MISSOURI PACIFIC is inquiring for five locomotive tenders of 15,000-gal capacity.

THE MAINE CENTRAL has ordered two locomotive tenders from the American Locomotive Company.

THE LEHIGH & HUDSON RIVER has ordered two consolidation type locomotives from the Baldwin Locomotive Works.

THE MINNESOTA, DAKOTA & WESTERN has ordered one eight-wheel switching locomotive from the Baldwin Locomotive Works.

THE CANADIAN NATIONAL ordered 12 locomotives, instead of 10, from the American Locomotive Company for Grand Trunk Western service, increasing the order two locomotives. In the *Railway Age* of February 19, we reported orders for 24 locomotives for service in the United States and for 40 in Canada.

Freight Cars

THE PERE MARQUETTE is inquiring for 1,000 underframes.

THE DULUTH, MISSABE & NORTHERN is inquiring for 250 ore cars.

THE OLIVER IRON MINING COMPANY is inquiring for from 25 to 50 air dump cars.

THE GREAT NORTHERN is asking for prices on repairs to 50 miscellaneous freight cars.

THE WHEELING STEEL CORPORATION, Wheeling, W. Va., is inquiring for 10 flat cars of 70 tons' capacity.

THE COLORADO & SOUTHERN has ordered 100 Hart selective ballast cars from the Rodger Ballast Car Company.

THE CANADIAN NATIONAL has ordered 200 automobile cars from the Eastern Car Company. This is in addition to the orders reported in the *Railway Age* of February 12 and 19.

THE CHICAGO, BURLINGTON & QUINCY has ordered 200 Hart selective ballast cars from the Rodger Ballast Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 29. An order has also been placed with the Ryan Car Company for 150 center sills for refrigerator cars.

Passenger Cars

THE SOUTHERN PACIFIC is inquiring for twenty 72-ft. coaches, five 2-compartment 72-ft. coaches, five 3-compartment 72-ft. coaches, five 72-ft. interurban coaches, thirty 70-ft. baggage cars, five 70-ft. baggage and mail cars, five baggage horse cars and six dining cars.

THE ATCHISON, TOPEKA & SANTA FE has ordered five combination mail and baggage cars and two combination coach, baggage and smoking cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of December 11.

Iron and Steel

THE SOUTH MANCHURIAN RAILWAY is inquiring through New York export houses for 5,300 tons of 30-lb. rail and accessories.

THE ILLINOIS CENTRAL has ordered 220 tons of structural steel for pipe supports at Paducah, Ky., from the Mississippi Valley Structural Steel Company.

THE PENNSYLVANIA is inquiring for 500 tons of steel for a bridge at Chester, Pa. This road has ordered 200 tons for a bridge near Philadelphia, from the Bethlehem Steel Company.

Machinery and Tools

THE BALTIMORE & OHIO is inquiring for about 40 machine tools, including a number of heavy tools.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered a 24-in. shaper from the Niles-Bement-Pond Company.

THE BOSTON & MAINE has ordered a 36-in. by 44-in. side head mill from the Niles-Bement-Pond Company.

THE BOSTON & MAINE has ordered three motor-driven grinding machines from the Niles-Bement-Pond Company.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered one magnetic hand crane for use at its Dubuque, Iowa, terminal through Thaleg & Hock, Inc., from the Bengan-Schmidt Company.

THE NORFOLK & WESTERN has ordered two 25-ton locomotive cranes and three ditchers from the American Hoist & Derrick Company, and one 30-ton locomotive crane from the Industrial Works.

Signaling

THE LOS ANGELES & SALT LAKE (Union Pacific) has ordered from the General Railway Signal Company an electric interlocking for Los Angeles, Cal.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company an electro-mechanical interlocking for MR Tower, Millers, Ohio; ten electric and eight mechanical levers.

THE CHESAPEAKE & OHIO has ordered from the Union Switch & Signal Company, for its installation of the Union intermittent inductive train stop system, 16 additional wayside inductors and eight locomotive sets.

Supply Trade

E. S. Black has been appointed consulting engineer of the **American Manganese Steel Company**, Chicago Heights, Ill. **A. H. Exton** has been appointed chief engineer.

Curtis B. Friday has been appointed sales engineer of wheels and forgings in the rail bureau of the general sales department of the **Illinois Steel Company**, Chicago. **Norman M. Hench** has been appointed sales engineer of track accessories in the rail bureau of the general sales department.

Cecil R. Pilsbury, general auditor of the **Commonwealth Steel Company**, Granite City, Ill., has been promoted to treasurer. **Oliver T. Ledford**, assistant to the president, has been promoted to secretary. Frank L. Morey, secretary and treasurer, has resigned. **Harrison Hoblitzelle** has been elected vice-president and manager of purchases.

The Gisholt Machine Company, Madison, Wis., recently opened an office at 722 West Washington Boulevard, Chicago, in charge of **R. E. MacCartney**, who has been special factory representative in the Chicago district for the past year. Mr. MacCartney will be assisted by **E. B. Verner**, who has served for several years in the home office.

R. H. Bourne, formerly vice-president and sales manager of the **Whiting Corporation**, Harvey, Ill., is now senior vice-president and will devote practically his entire time to the **Grindle Fuel Equipment Company** and **Joseph Harrington Company** sales. **N. S. Lawrence**, formerly vice-president and assistant sales manager, is now vice-president and sales manager in charge of sales for Whiting Corporation and **Swenson Evaporator Company** lines. Mr. Lawrence will be assisted by **A. H. McDougall**, vice-president and consulting engineer, and **R. E. Prussing**, vice-president in charge of district offices and agents. The above changes in the sales organization were made on account of the addition of new lines and the acquisition of subsidiary companies.

Pressed Steel Car Company

The annual report of the Pressed Steel Car Company for the year ended December 31, 1926, shows a net loss after charges for depreciation, etc., of $620,802. In 1925, the company had a net income of $939,049, equivalent, after allowance for preferred dividends, to 51 cents a share on the common stock.

President F. N. Hoffstot, in his remarks to stockholders said in part:

"Notwithstanding the fact that the operations of the railroads were more successful than ever before, during 1926 they placed orders for about one-third less cars than during 1925. Your company's car plants operated at less than 25 per cent of capacity during the year, and in view of this the results for 1926 are easily accounted for. Some of the large steel manufacturers have acquired through consolidation, plants where they build cars which permit them to dispose of their steel at less than market prices. In considering these results it should be remembered your company is engaged exclusively in the manufacture of all classes of freight cars, including air dump cars, passenger cars, street railway cars, truck bolsters, brake beams and other miscellaneous car parts and car forgings. Therefore, when few car orders are placed and these only after keen competition, the margin of profit is small, but it must not be overlooked that it is essential to hold the necessary organization and also to maintain our plants in a high state of efficiency, and, judging from the past history of the car business, the time may not be far distant when your plants should be operating to capacity.

"The Committee on Public Relations of the Eastern Railroads states the railroads of the United States will probably spend between $825,000,000 and $925,000,000 during the current year for new equipment and additions and improvements to their properties, and that 40 per cent of this will be used to purchase equipment.

"The president of a prominent railroad, in commenting on the 'Hand to Mouth Buying Policy,' forecasts that freight traffic will probably double in about 12 years, and, therefore, the railroads are bound to need a large number of cars.

"The fact that fewer cars were purchased by the railroads in 1926 than in 1925, notwithstanding they have operated at increased mileage and at increased speed per diem, is due to a variety of causes, in addition to those referred to in last year's report.

"First: There are more steel and steel underframe cars in operation; therefore, the life of the average car is longer.

"Second: There has been a tendency in recent years on the part of the railroads to increase their facilities for making heavy repairs in their own shops, and even for building new cars. The car manufacturers believe it costs the railroads a great deal more to do this work in their own shops than in well equipped car manufacturing plants. It is hoped the Interstate Commerce Commission will establish an accounting system that will segregate manufacturing costs from legitimate railroad transportation costs, so that it can be determined whether the railroads are doing work cheaper than the car manufacturers, and if it is costing them more, whether they are warranted in paying such costs. There is a large capital investment by railroads in plants for building of and repairs to cars and locomotives which is being increased yearly, slowly but surely closing many industrial car manufacturing and repair shops, thus eliminating efficient manufacturing reserves for emergencies due to war or labor difficulties which reserves were found extremely necessary within the last ten years. If this railroad capital thus invested is not producing revenue, it should be known.

"Third: The rulings of the Interstate Commerce Commission against establishing car trusts for rebuilt cars, puts this cost directly in the operating expenses of the railroads, or makes it necessary for the smaller roads to confine their expenditures to light repairs on old cars.

"Your passenger car plant has operated at about 70 per cent of capacity, and the earnings from completed business have helped to carry some of the general overhead of the other plants. We believe this plant will furnish substantial earnings during the year 1927, as a considerable amount of business has been carried over and the prospects for new business are good."

Obituary

Justus H. Schwacke, former president of William Sellers & Co., Inc., Philadelphia, Pa., died on February 17 at Boca Grande, Florida, at the age of 79. Mr. Schwacke had served the company continuously from July 15, 1862, to May 31, 1926, when he resigned and retired to private life. He was elected secretary when the company was incorporated in 1886, director in 1902, manager in 1905 and president in 1922. He was active since their formation in a number of associations including the National Metal Trades Association, of which he was president for the year 1910-11, and served also for several years as president of the Metal Manufacturers Association of Philadelphia.

Trade Publications

HARDWARE.—A new general catalogue, No. 27, listing and illustrating the Corbin line of locks and hardware for buildings, has been issued by P. & F. Corbin, New Britain, Conn. The catalogue contains 486 attractively arranged pages, bound in a dark blue cloth cover. It is provided with a numerical thumb index.

January Locomotive Shipments

January shipments of locomotives, from principal manufacturing plants, based on reports received by the Department of Commerce, totaled 57 locomotives, as compared with 185 in December and 126 in January, 1926. The following table gives the shipments and unfilled orders of locomotives for each month since January, 1926.

Year and month	Shipments					Unfilled Orders End of Month				
		Domestic		Foreign			Domestic		Foreign	
	Total	Steam	Electric	Steam	Electric	Total	Steam	Electric	Steam	Electric
1926										
January	*126	*91	11	*22	*2	653	506	53	52	42
February	163	101	22	38	2	572	442	60	30	40
March	162	146	11	4	1	780	635	50	54	41
April	151	122	12	1	16	713	580	44	60	29
May	140	105	14	12	9	726	585	46	72	23
June	159	133	11	12	3	667	522	53	72	20
July	132	82	20	30	0	555	445	36	51	23
August	124	78	16	23	7	525	455	26	28	16
September	134	109	13	5	7	498	386	24	77	11
October	151	124	15	12	...	390	286	20	71	13
November	128	109	15	3	1	517	391	27	84	15
December	185	152	17	5	11	398	297	14	79	8
Total (year)	*1,755	*1,352	177	*167	*59	...	...	...	...	...
1927										
January	57	16	8	31	2	405	334	16	49	6

*Revised.

Construction

CANADIAN NATIONAL.—A contract has been let to J. Coughlan & Sons, Vancouver, B. C., for the construction of a bridge over the Thompson river, near Kamloops, B. C., to cost about $200,000.

CHICAGO & NORTH WESTERN.—Bids closed on February 24 for the construction of a dock house at Green Bay, Wis., estimated to cost about $25,000.

CHICAGO, BURLINGTON & QUINCY.—This company contemplates the construction of a storehouse at Sheridan, Wyo., to cost about $40,000.

GREAT NORTHERN.—Enlargement and remodeling of the passenger station at Bellingham, Wash., at a cost of approximately $25,000, is planned by this company.

MINNESOTA WESTERN.—Erle D. Luce, vice-president and general manager, has announced that this company plans to apply to the Interstate Commerce Commission, within the next three months, for permission to construct a line between Montevideo, Minn., and Brookings, S. D., about 60 miles, to connect with an extension now nearing completion from Lake Lillian, Minn., the present terminus to Montevideo. The cost of construction is estimated at $1,200,000.

MISSOURI PACIFIC.—A contract for the construction of a passenger station at San Juan, Tex., to replace a building destroyed by fire, has been let to H. J. Hanson & Son, Brownsville, Tex. The station will be constructed of stucco and tile in the Spanish type of architecture.

MISSOURI PACIFIC.—Bids closed on February 8 for the construction of a combination freight and passenger station at Preston, Kan. A contract has been awarded to the Kansas City Bridge Company, Kansas City, Mo., for the reconstruction of Bridge No. 2 at Auburn, Neb., at a cost of about $22,000. A contract has been let to the American Bridge Company for the fabrication of 4,000 tons of steel to be used in this company's office building at St. Louis, Mo., erection to be undertaken by the Ben Hur Erection Company, St. Louis.

NEW ORLEANS PUBLIC BELT.—Plans and specifications have been prepared for the construction of a combination railroad and highway bridge over the Mississippi river at New Orleans, La. Negotiations for its use on a specified cost per car movement by the several railroads entering New Orleans are now under way as a basis for financing the construction. The total cost is estimated at $14,000,000.

NEW YORK CENTRAL.—A contract for the construction of a car repair shop at Toledo, Ohio, to cost approximately $75,000, has been awarded to the Newton & Baxter Company, Toledo, Ohio.

PORT OF ALBANY.—Contracts for the laying of approximately four miles of track, consisting of switches and storage tracks, will be let early in the spring by the Albany (N. Y.) Port District Commission in connection with the port development on Westerlo Island. Bids will be advertised as soon as the franchise of the commission has received the approval of the Interstate Commerce and the Public Service Commission. About two miles of track will also be built this year in connection with the lumber storage yard in Rensselaer.

POWELL RIVER PULP & PAPER COMPANY.—This company has made surveys for the construction of a logging railroad from Yarkon Lake, B. C., to the Shannon River, to aid in the exploiting of timber limits on Graham Island of the Queen Charlotte group.

SOUTHERN PACIFIC.—This company has under consideration the construction of hotel facilities on the Apache Trail in Arizona, although no conclusions have been reached as to the date when construction will start or the type of facilities to be erected.

SOUTHERN PACIFIC.—A building permit has been obtained for the construction of a brick and steel fruit and vegetable terminal facing on Front street, New Orleans, La. The terminal, whose main structure will be 300 ft. long, will include space for temporary storage of fruit and vegetables and an office building and will involve an expenditure of $100,000.

TEMISKAMING & NORTHERN ONTARIO.—The Ontario government contemplates the extension of this railroad from its present terminus at Island Falls Junction, Ont., north to James Bay, about 85 miles, at an estimated cost of $5,500,000.

WENATCHEE SOUTHERN.—A contract has been awarded to the Henry & McFee Contracting Company, Seattle, Wash., for the construction of a line from Wenatchee, Wash., to Beverly, 53 miles, and from Hanford, Wash., to Kennewick, 30 miles. At Beverly the line will connect with the Chicago, Milwaukee & St. Paul, over whose tracks it will operate to Hanford, 46 miles. At Kennewick, connection will be made with the Oregon-Washington Railroad & Navigation Company, the Northern Pacific and the Spokane, Portland & Seattle.

Railway Finance

ATCHISON, TOPEKA & SANTA FE.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $60,631,495, equivalent after allowance for dividends on the preferred stock to $23.41 a share on the common stock. Net income in 1925 was $46,157,934 or $17.18 a share.

ATLANTIC COAST LINE.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other charges of $16,519,873, equivalent after allowance for dividends on the preferred stock to $24.07 a share on the common stock. Net income in 1925 was $18,483,142 or $26.83 a share.

BALTIMORE & OHIO.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to issue $9,750,000 of 4½ per cent equipment trust certificates, to be used in the purchase of equipment to the amount of $13,930,476. The application says the securities have not yet been offered for sale but that price, terms and conditions, when developed, will be submitted to the commission for approval. The equipment to be acquired includes 19 locomotives at $69,500 each, 1 at $79,040; 1,000 steel hopper cars at $2,312 and 200 at $2,294; 500 steel box cars at $1,855; 1,000 steel box cars at $1,933; 5 steel dining cars at $51,600; 50 steel coaches at $28,180; 15 steel combination passenger and baggage cars at $24,673; 5 steel baggage and mail cars at $27,645; 10 steel baggage and mail cars at $26,731; and 15 steel baggage cars at $21,699.

CACHE VALLEY.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its line extending from a connection with the St. Louis-San Francisco at Sedgewick, Ark., to Light, 9.6 miles. The reason for the abandonment is lack of traffic.

CENTRAL NEW ENGLAND.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $769,023 as compared with $236,182 in 1925.

CENTRAL OF NEW JERSEY.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $4,368,760 equivalent to $15.92 a share on the outstanding stock. Net income in 1925 was $3,596,117 or $13.10 a share.

CHESAPEAKE & OHIO.—*Leases.*—The Interstate Commerce Commission has authorized a lease for the Chesapeake & Hocking, the new line built in the Chesapeake & Ohio's interest from Gregg, Ohio, to Valley Crossing forming a link between the parent company and the Hocking Valley. The Interstate Commerce Commission has also authorized a lease of the Island Creek operating in Logan County, W. Va., all of the stock of which has been owned by the Chesapeake & Ohio since May, 1926.

CHICAGO & EASTERN ILLINOIS.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $644,355 equivalent to $2.92 a share on the preferred stock. Net income in 1925 was $161,967 or 73 cents a share.

CHICAGO, BURLINGTON & QUINCY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $18,294,000 of general mortgage 4 per cent bonds, to be pledged under its first and refunding mortgage, and

to issue and sell $30,000,000 of first and refunding mortgage 4½ per cent bonds. It is proposed to sell $18,294,000 of the first and refunding bonds to provide for the retirement of Nebraska Extension 4 per cent bonds on their maturity on May 1, and $11,706,000 to provide for improvements and new equipment, but no arrangement for the sale has yet been made. Such matters will be submitted to the commission, the application says, prior to the entry of an order.

CINCINNATI NORTHERN.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $982,578 equivalent to $32.75 a share on the capital stock. Net income in 1925 was $963,996 or $32.13 a share. Selected items from the income statement follow:

CINCINNATI NORTHERN

	1926	1925
Railway operating revenues	$4,808,433	$4,756,220
Railway operating expenses	3,114,683	3,024,068
Net revenue from railway operations	$1,693,751	$1,732,152
Railway tax accruals	$330,033	$310,997
Equipment and joint facility rents	307,424	378,654
Total	$637,633	$689,883
Net railway operating income	$1,056,117	$1,042,269
Miscellaneous and non-operating income	35,498	38,473
Gross income	$1,091,616	$1,080,742
Deductions from gross income	109,038	116,746
Net income	$982,578	$963,996
Dividends accrued	$300,000	$300,000
Surplus	$682,578	$663,996

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $11,395,283, equivalent after allowance for 5 per cent dividends on the preferred stock to $23.16 a share on the common stock. Net income in 1925 was $11,407,525 or $23.19 a share. Selected items from the income statement follow:

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS

	1926	1925
Railway operating revenues	$94,539,987	$92,061,069
Railway operating expenses	70,058,665	67,001,481
Net revenue from railway operations	$24,481,322	$25,059,588
Railway tax accruals	$5,384,906	$5,534,374
Equipment and joint facility rents	539,470	927,772
Total	$5,954,077	$6,498,879
Net railway operating income	$18,527,246	$18,560,709
Miscellaneous and non-operating income	1,486,476	1,596,160
Gross income	$20,013,722	$20,156,869
Deductions from gross income	8,618,438	8,749,344
Net income	$11,395,283	$11,407,525
Dividends accrued	$3,791,934	$3,086,503
Sinking and other reserve funds	47,421	45,301
Total	$3,839,355	$3,131,805
Surplus	$7,555,929	$8,275,721

DELAWARE & HUDSON.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges but before sinking fund allowances of $8,303,277 equivalent to $19.27 a share on the capital stock. Net income in 1925 was $5,234,977, or $12.14 a share.

DELAWARE, LACKAWANNA & WESTERN.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $17,868,238, equivalent to $10.52 a share on the $50 par value capital stock. Net income in 1925 was $14,430,194, or $8.53 a share.

DENVER & INTERURBAN.—*Foreclosure Sale.*—This electric railway which ceased operations between Denver, Colo., and Boulder on December 15, 1926, was sold at auction in Denver on February 16 by order of the federal court. The proceeds of the sale to satisfy claims on defaulting bonds and interest amounting to $2,230,000. No bid that was equitable for the property as a whole was received and the property was sold in 11 parcels, the total received being $88,850, as compared with the highest unit bid of $50,000. The Colorado & Southern bought the steel bridges, the office supplies and the main building at Denver, allowing the track, copper wire and all equipment to go to various bidders. The Denver & Interurban Motor Company, a subsidiary of the Colorado & Southern, purchased the shelter stations along the route between Denver and Boulder, the shops and the machinery. The Colorado & Southern formerly owned the total outstanding mortgage and other long-term indebtedness of this company.

DETROIT & MACKINAC.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges $29,774 equivalent to $3.13 a share on the outstanding preferred stock. Net income in 1925 was $100,291 equivalent to $2.63 a share on the common stock after allowance for 5 per cent dividends on the preferred stock.

DETROIT & MACKINAC.—*Abandonment.*—The Interstate Commerce Commission on February 17 made public a report proposed by Examiner Thomas F. Sullivan recommending that a certificate be issued authorizing the abandonment of the Au Sable branch, from Oscoda to Comins, 50.6 miles; the Rose City branch, from Emery Junction to Rose City, 31.22 miles; and the Lincoln branch from Lincoln Junction to Lincoln, 14.66 miles, all in Michigan.

FRANKFORT & CINCINNATI.—*Sale.*—The capital stock and property of this company were sold at public auction on January 31 at Frankfort, Ky., by Master Commissioner J. W. Jeffers of the Franklin Circuit Court to James P. Lewis, Georgetown, Ky., a former secretary of state of Kentucky, for $100,000. The railroad, which is 41 miles long, was ordered sold to satisfy a bond issue of $160,000. The Louisville & Nashville was eliminated as a prospective bidder by a judgment of the Franklin Circuit Court which found that the L. & N. had been operating the F. & C. in violation of the Kentucky constitution which forbids a railroad to operate competitive parallel lines.

INDIANA HARBOR BELT.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $1,449,013, comparing with $1,439,855 in 1925. Selected items from the income statement follow:

INDIANA HARBOR BELT

	1926	1925
Railway operating revenues	$11,363,945	$11,210,774
Railway operating expenses	8,147,890	7,604,937
Net revenue from railway operations	$3,216,056	$3,605,837
Railway tax accruals	$550,178	$488,600
Equipment and joint facility rents	783,395	1,237,692
Total	$1,339,230	$1,734,348
Net railway operating income	$1,876,826	$1,871,489
Miscellaneous and non-operating income	74,424	73,267
Gross income	$1,951,249	$1,944,756
Deductions from gross income	502,238	504,901
Net income	$1,449,012	$1,439,855
Surplus	$1,449,012	$1,439,855

KANSAS CITY TERMINAL.—*Tentative Valuation.*—The Interstate Commerce Commission has issued a tentative valuation report as of 1916 finding a final value for rate-making purposes of $37,299,066 for the property owned and used for common-carrier purposes. The outstanding capitalization was $41,294,000 and the investment in road and equipment was $38,806,674.

LEHIGH & NEW ENGLAND.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $1,364,044 equivalent to $10.02 a share on the $50 par value capital stock. Net income in 1925 was $683,647 or $5.02 a share.

LEHIGH VALLEY.—*1926 Earnings.*—Annual report for 1926 released on February 23 is the first complete report of any railroad for the year 1926 to be made public. Income account shows net income after interest and other charges of $10,021,113 equivalent after allowance for preferred dividends to $8.27 a share on the $50 par value common stock. Net income in 1925 was $8,046,564 or $6.64 per share. Selected items from the income statement follow:

LEHIGH VALLEY

	1926	1925
Total operating revenues	$80,453,150	$74,430,573
Total operating expenses	60,958,636	57,433,390
Net operating revenue	$19,494,514	$16,997,183
Railway tax accruals	$4,193,976	$3,604,182
Equipment rents—Dr.	1,588,811	1,154,456
Joint facility rents—Cr.	102,678	273,835
	$5,691,910	$4,502,203
Net railway operating income	$13,802,605	$12,494,980
Other income	3,164,021	2,492,232
Total income	$16,966,626	$14,987,212
Deductions from income	6,945,513	6,940,648
Net income	$10,021,113	$8,046,564

LOUISVILLE & NASHVILLE.—*1926 Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $19,422,111 equivalent to $16.60 a share on the outstanding capital stock. Net income in 1925 was $18,700,711 or $15.98 a share.

MICHIGAN CENTRAL.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $18,963,899 equivalent to $101.21 a share on the outstanding capital stock. Net income in 1925 was $18,806,194 or $100.36 a share. Selected items from the income statement follow:

MICHIGAN CENTRAL

	1926	1925
Railway operating revenues	$95,524,343	$91,864,377
Railway operating expenses	64,957,364	61,893,039
Net revenue from railway operations	$30,566,980	$29,971,338
Railway tax accruals	$5,979,585	$5,864,590
Equipment and joint facility rents	997,517	316,580
Total	$7,001,849	$6,207,357
Net railway operating income	$23,565,130	$23,763,981
Miscellaneous and non-operating income	1,763,385	1,529,006
Gross income	$25,328,516	$25,292,987
Deductions from gross income	6,364,617	6,486,793
Net income	$18,963,899	$18,806,194
Dividends accrued	$6,557,740	$5,152,510
Surplus	$12,406 159	$13,653 684

NASHVILLE, CHATTANOOGA & ST. LOUIS.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $2,511,258 equivalent to $15.70 a share on the outstanding stock. Net income in 1925 was $2,529,042 or $15.80 a share.

MISSOURI PACIFIC.—*Control of Marion & Eastern.*—The Interstate Commerce Commission has authorized the Missouri Pacific to effect a lease of the Marion & Eastern of which it was previously authorized by the commission to acquire control by purchase of all its capital stock.

NEW YORK CENTRAL.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $55,664,041 equivalent to $14.52 a share on the capital stock. Net income in 1925 was $48,627,224 or $12.69 a share. Selected items from the income statement follow:

NEW YORK CENTRAL
(Including Boston & Albany and Ohio Central Lines)

	1926	1925
Railway operating revenues	$399,537,749	$385,994,505
Railway operating expenses	298,931,038	290,440,958
Net revenue from railway operations	$100,606,711	$95,553,546
Railway tax accruals	$26,881,808	$25,343,923
Equipment and joint facility rents	1,339,331	2,071,798
Total	$28,448,219	$27,632,997
Net railway operating income	$72,158,492	$67,920,550
Miscellaneous and non-operating income	29,098,966	25,509,470
Gross income	$101,257,458	$93,430,020
Deductions from gross income	45,593,417	44,802,796
Net income	$55,664,641	$48,627,224
Dividends accrued	$26,827,815	$26,732,833
Sinking and other reserve funds	145,179	126,118
Total	$26,972,994	$26,858,951
Surplus	$28,691,047	$21,768,273

NEW YORK, SUSQUEHANNA & WESTERN.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows a deficit of $206,365 comparing with a deficit of $457,412 in 1925.

PENNSYLVANIA.—*Valuation Hearing.*—The Interstate Commerce Commission has announced that hearings on the protests against its tentative valuations of the various properties in the Pennsylvania system will begin at Washington on March 28 before Examiner Gibson.

PHILADELPHIA & CAMDEN FERRY COMPANY.—*Stock Reduction.*—At a special meeting of the stockholders held in Camden, N. J., on February 18, action was taken authorizing a decrease in the total authorized capital stock of the company from $2,000,000 to $1,600,000, and the reduction of the par value per share from $50 to $40 by the payment in cash of $10 per share to the stockholders.

PITTSBURGH & LAKE ERIE.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $7,838,642, comparing with $7,369,603 in 1925. Selected items from the income statement follow:

PITTSBURGH & LAKE ERIE

	1926	1925
Railway operating revenues	$34,205,976	$32,026,689
Railway operating expenses	27,546,039	25,455,383
Net revenue from railway operations	$6,659,937	$6,571,306
Railway tax accruals	$2,152,571	$2,178,545
Equipment and joint facility rents—Cr.	4,642,809	4,502,046
Total, Cr.	$2,486,867	$2,320,484
Net railway operating income	$9,146,804	$8,891,790
Miscellaneous and non operating income	1,422,285	1,206,108
Gross income	$10,569,089	$10,097,898
Deductions from gross income	2,730,447	2,728,296
Net income	$7,838,642	$7,369,603
Dividends accrued	$7,197,120	$3,598,560
Surplus	$641,522	$3,771,043

RUTLAND, TOLUCA & NORTHERN.—*Abandonment of Operation by Chicago & Alton.*—The Interstate Commerce Commission has granted a certificate to the receivers of the Chicago & Alton authorizing them to abandon operation of this line which extends from Rutland, Ill., to Granville, 27 miles. The property was leased for 999 years by the Alton in 1910. The Alton owns all of its capital stock which is deposited under the Alton general mortgage securing $16,834,000 6 per cent bonds maturing in 1934. The Alton is guarantor also of $225,000 Rutland, Toluca & Northern bonds and the bondholders declined to take over the property which has been operated at a loss due to lack of traffic.

RUTLAND.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest and other fixed charges of $475,962 equivalent to $5.31 a share on the preferred stock. Net income in 1925 was $371,913 or $4.15 a share on the preferred stock. Selected items from the income statement follow:

RUTLAND

	1926	1925
Railway operating revenues	$6,759,524	$6,440,041
Railway operating expenses	5,529,382	5,449,501
Net revenue from railway operations	$1,230,142	$990,541
Railway tax accruals	$356,912	$310,321
Equipment and joint facility rents, Cr.	97,412	106,759
Total	$259,646	$203,878
Net railway operating income	$970,496	$786,663
Miscellaneous and non-operating income	76,478	73,645
Gross income	$1,046,974	$860,308
Deductions from gross income	481,399	488,396
Net income	$565,575	$371,913
Dividends accrued	$89,613	.....
Surplus	$475,962	$371,913

ST. LOUIS-SAN FRANCISCO.—1926 *Earnings.*—Tabloid report of 1926 earnings issued under date of February 19, shows a balance of $7,545,374 after interest on adjustment and income bonds, equivalent, after preferred dividends, to $14.17 a share on the common stock. Net in 1925 was $7,162,552 or $14.88 per share on the smaller number of shares then outstanding. Selected items from the income statement follow:

ST. LOUIS-SAN FRANCISCO

	1926	1925
Railway operating revenues	$94,406,054	$94,715,375
Railway operating expenses	65,921,910	65,928,946
Net revenue from railway operations	$28,484,144	$28,786,429
Railway tax accruals	$4,842,388	$5,093,124
Other operating charges	403,182	1,371,199
Total operating charges	$5,245,569	$6,464,324
Net railway operating income	$23,238,575	$22,322,105
Non-operating income	403,974	516,209
Gross income	$23,642,550	$22,838,314
Deductions from gross income	603,690	574,158
Balance available for interest, etc.	$23,038,860	$22,264,156
Interest on fixed charge obligations	10,950,957	$10,559,076
Interest on adj. bonds	2,432,209	2,432,207
Interest on income bonds	2,110,320	2,110,320
Balance	$7,545,374	$7,162,552
Dividends on preferred stock	419,918	420,932
Dividends on common stock	3,431,973	2,489,140
Total dividends	$3,851,891	$2,910,072
Balance	$3,693,483	$4,252,480

SEABOARD AIR LINE.—1926 *Earnings.*—A preliminary statement of 1926 earnings shows net income after interest (including interest on adjustment bonds) and other fixed charges of $3,178,811, equivalent after allowance for dividends on the 4 and 6 per cent preferred stocks to $5.99 a share on the common stock. Net income in 1925 was $2,584,975 or $4.39 a share.

SEABOARD AIR LINE.—*Bonds Sold.*—Dillon, Read & Co. and Ladenburg, Thalmann & Co. offered on February 23, $5,000,000 Seaboard Air Line first and consolidated mortgage 6 per cent bonds, series A, maturing September 1, 1945, at a price of 98¼ and interest from March 1, 1927, giving a yield of over 6.10 per cent, and

$2,000,000 Seaboard-All Florida first mortgage 6 per cent bonds, series B, maturing August 1, 1935, guaranteed as to principal and interest by endorsement by the Seaboard Air Line. The offering price of the Seaboard-All Florida was 97¾ and interest from February 1, 1927, giving a yield of over 6.30 per cent.

WYOMING & MISSOURI RIVER.—*Abandonment.*—The Interstate Commerce Commission has issued a proposed report by Examiner Molster recommending a finding by the commission that the public convenience and necessity permit the abandonment of this company's line from Belle Fourche, S. D., to Aladdin, Wyo., 17.64 miles.

Average Price of Stocks and Bonds

	Feb. 23	Last week	Last year
Average price of 20 representative railway stocks.	107.75	105.90	93.24
Average price of 20 representative railway bonds.	98.77	98.26	95.50

Dividends Declared

BOSTON & ALBANY—2 per cent, quarterly, payable March 31 to holders of record February 28.

CHICAGO, NORTH SHORE & MILWAUKEE—Prior lien, 1¾ per cent, quarterly; preferred, 1½ per cent, quarterly, both payable April 1 to holders of record March 15.

GULF, MOBILE & NORTHERN—Preferred, $1.50, quarterly, payable April 1 to holders of record March 15.

Valuation Reports

Final or tentative valuation reports have been issued by the Interstate Commerce Commission finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

FINAL REPORTS		
Atlanta Terminal Company...	$2,926,315	1918
Boyne City, Gaylord & Alpena.	1,706,500	1918
Wabash, Chester & Western..	886,100	1917
East Carolina.....	430,000	1917
Waycross & Southern.....	188,900	1918
TENTATIVE REPORTS		
Appalachian.....	$160,670	1920
Battle Creek & Sturgis.....	560,000	1917
Coal Belt Electric.....	420,000	1918
St. Joseph & Grand Island...	7,646,764	1919

P. R. R. Station, Pittsburgh, Pa.

Railway Officers

Financial, Legal and Accounting

The firm of **Goodfellow, Eells, Moore & Orrick** has been appointed counsel for the Northwestern Pacific, succeeding **Stanley Moore**, general counsel, deceased.

Frederick W. Fleck, assistant general claim agent of the Reading, with headquarters at the Reading Terminal, Philadelphia, has been appointed general claim agent, with the same headquarters.

A. L. Mattern, assistant auditor of disbursements of the Chesapeake & Ohio, with headquarters at Richmond, Va., has been appointed auditor of capital expenditures, with the same headquarters.

H. R. McCormick, auditor of disbursements of the Reading, with headquarters at Philadelphia, who has retired, entered the service of the Reading on March 15, 1872, as messenger in the commercial telegraph office at Pottstown, and served for a number of years as clerk in the office of the resident engineer at that place, and later at Philadelphia. He was later advanced to a position in the office of the assistant chief engineer. On May 1, 1885, he was transferred to the accounting department, entering the ranks as clerk. He was later advanced to chief clerk in the office of the auditor of disbursements, and on January 1, 1914, was appointed auditor of disbursements, which position he was holding at the time of his retirement.

Operating

Thomas Kilpatrick, general manager of the Pacific Great Eastern, with headquarters at Vancouver, B. C., has resigned from railway service to become superintendent of bridges of the Province of British Columbia.

Taber Hamilton has been appointed general agent and superintendent of the Grand Rapids division of the Western region of the Pennsylvania, with headquarters at Grand Rapids, Mich., following his return from a leave of absence and succeeding **R. E. Casey**, acting superintendent, who has been appointed trainmaster of the Grand Rapids division. **K. R. Vought**, assistant superintendent of the New York division of the Eastern region, with headquarters at Jersey City, N. J., has been promoted to the position of superintendent of the St. Louis division of the Western region, with headquarters at Terre Haute, Ind.

Traffic

C. A. Melin, general eastern passenger agent of the New York, Chicago & St. Louis, with headquarters at Buffalo, N. Y., has been transferred to New York.

W. F. Paton, assistant general traffic manager of the New York & Cuba Mail Steamship Company, with headquarters at New York, has been appointed general agent in charge of traffic interests of the Mexican in the United States and Canada, with headquarters at Chicago and New York.

A. J. Poston, general agent of the passenger department of the Southern Pacific, with headquarters at New York City, has been appointed general agent at Washington, D. C. **Hugh H. Gray**, assistant general passenger agent of the Louisiana Lines, with headquarters at New Orleans, La., has been appointed general agent of the passenger department at New York, succeeding Mr. Poston.

B. J. DeGroodt, assistant general freight agent of the Chicago Great Western, with headquarters at Omaha, Neb., has been transferred to Minneapolis, Minn., and St. Paul, succeeding P. R. Flanagan, transferred to Chicago, where he will devote his time to solicitation matters. **W. F. Stewart**, general agent at Spokane, Wash., has been promoted to assistant general freight agent, with headquarters at Omaha, succeeding Mr. DeGroodt, and Mr. Stewart will be succeeded by **John B. Hoverson**, commercial agent at Des Moines, Iowa.

M. H. Jacobs, who has been appointed general freight agent of the Western Maryland, with headquarters at Pittsburgh, Pa., was born in Waynesboro, Pa., and entered railway service on October 1, 1893, with the Western Maryland. He started as messenger boy in the freight office at York, Pa., later going to Baltimore, Md., as traveling freight agent, being advanced to general agent at Pittsburgh in 1912, and later to assistant general freight agent, which position he was holding at the time of his recent appointment as general freight agent. He will now be in charge of general solicitation matters, having jurisdiction over all outside offices, and along the line.

Ralph D. Tilt, who has been appointed general freight agent of the Erie, with headquarters at New York, was born in Demarest, N. J., and was educated in the Demarest Public School and in the Englewood High School, which latter institution he attended from 1887 until 1890. He entered railway service on November 3, 1890, with the New York, Susquehanna & Western. On December 1, 1893, he became passenger ticket

clerk in the general office, and on July 1, 1895, became chief clerk in the same office. On July 1, 1898, when the Erie absorbed the New York, Susquehanna & Western, Mr. Tilt became chief clerk to the division freight agent, and on May 1, 1901, became chief rate clerk in the general freight office. On April 1, 1902, he became clerk in the traffic department and chief clerk to the general freight agent on May 10, 1908. He was appointed assistant to the general freight agent on August 1, 1910, and chief of the tariff bureau on November 1, 1911. Mr. Tilt was appointed assistant general freight agent on July 1, 1921, which position he was holding at the time of his recent appointment.

Mechanical

O. C. Wright, road foreman of engines on the Western region of the Pennsylvania at Indianapolis, Ind., has been promoted to master mechanic of the Indianapolis division, with the same headquarters, succeeding **W. R. Davis**, transferred to the Eastern region, with headquarters at Meadows, N. J.

Samuel Lynn, master car builder of the Pittsburgh & Lake and the Lake Erie & Eastern, with headquarters at McKees Rocks, Pa., has been appointed superintendent of rolling stock, with the same headquarters. **William C. Lang**, assistant master car builder, with headquarters at McKees Rocks, has been appointed master car builder, succeeding Mr. Lynn. **William H. Simmons** has been appointed general foreman, with headquarters at Dickerson Run, Pa., succeeding **P. H. Fieldson**, promoted.

O. P. Reese, superintendent of motive power of the Eastern Ohio division of the Pennsylvania, with headquarters at Pittsburgh, has been appointed general superintendent of motive power of the Central region, with the same headquarters, succeeding **F. W. Hankins**, who has been appointed chief of motive power. **J. B. Diven**, master mechanic of the Philadelphia Terminal division, with headquarters at West Philadelphia, has been appointed superintendent of motive power of the Eastern Ohio division at Pittsburgh, succeeding Mr. Reese. **R. W. Wray**, master mechanic at Renovo, Pa., becomes master mechanic at West Philadelphia, and **A. W. Byron**, master mechanic at Wellsville, Ohio, becomes master mechanic at Renovo. **E. L. Bachman**, master mechanic at Mingo Junction, Ohio, will now be master mechanic at Wellsville, Ohio, and **J. S. Richards**, assistant master mechanic at Akron, Ohio, has been advanced to master mechanic at Mingo Junction. **B. M. Swope**, master mechanic of the Buffalo division at Olean, N. Y., becomes master mechanic at Columbus, Ohio, succeeding **R. H. Flinn**, who was recently advanced to superintendent of motive power of the Northern division. **D. K. Chase**, assistant master mechanic of the Middle division, succeeds Mr. Swope as master mechanic of the Buffalo division. All appointments and advancements are effective March 1.

Engineering, Maintenance of Way and Signaling

J. T. Ridgely, supervisor on the Eastern Ohio division of the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been promoted to division engineer of the Richmond division of the Western region, with headquarters at Richmond, Ind., succeeding **S. W. Hodgin**, resigned to enter the railway supply business.

T. P. Watson, assistant engineer of construction of the Central region of the Pennsylvania, with headquarters at Pittsburgh, has been transferred to Philadelphia and advanced to the position of principal assistant engineer—Philadelphia improvements. **S. H. Noyes**, formerly associated with the bridge department of the Pennsylvania, and at present bridge engineer of the city of Philadelphia, has been appointed assistant to the chief engineer—Philadelphia improvements. In their respective positions, which are newly created, Mr. Watson and Mr. Noyes will act as aides to **Robert H. Farnham**, who was recently advanced to chief engineer—Philadelphia improvements, in general charge of carrying out the work in connection with the Pennsylvania's new Philadelphia passenger terminal. **A. R. Wilson**, assistant engineer of bridges and buildings, with headquarters at Philadelphia, has been advanced to engineer of bridges and buildings, succeeding Mr. Farnham. All appointments and advancements are effective March 1.

Special

John O. James has been appointed grain agent of the New York Central and the West Shore, with headquarters at New York, succeeding **George Linn**, deceased.

W. A. Radspinner, special engineer of the Chesapeake & Ohio, with headquarters at Richmond, Va., has been appointed superintendent of fire prevention and a member of the fire prevention committee, with the same headquarters, succeeding **W. S. Greene**, who has been assigned to other duties.

Obituary

J. G. Cantrell, general western agent of the Seaboard Air Line, with headquarters at Chicago, died on January 19, at Daytona, Fla., after a month's illness.

W. P. Smith, assistant superintendent of the St. Louis-Southwestern, with headquarters at Pine Bluff, Ark., died on February 14, at North Little Rock, Ark., from heart disease.

John I. Dille, general attorney of the Minneapolis & St. Louis, the Iowa Central and the Des Moines & Ft. Dodge (the latter two now parts of the M. & St. L.) from 1905 to 1909, died on February 15 at his home in Minneapolis, Minn., at the age of 70. Mr. Dille entered railway service in 1892 as attorney for the Chicago, Rock Island & Pacific at Guthrie, Okla., after serving from 1890 as county register of deeds at that point. At the time of his appointment as general attorney for the M. & St. L. he held the position on the Rock Island of assistant general counsel for Iowa. Mr. Dille entered the private practice of law in 1909 and at the time of his retirement in 1922 he was head of the law firm of Dille, Hoke, Krause & Faegre, Minneapolis.

H. H. Forney, at one time mechanical engineer, valuation department, of the Southern Pacific, died on February 4, at Hanover, Pa. Mr. Forney was born on October 28, 1869, at Hanover, Pa. From May 20, 1885, until May, 1889, he served as machinist's apprentice on the Pittsburgh, Cincinnati, Chicago & St. Louis (now a part of the Pennsylvania), and from the latter date until September of the same year prepared to enter Ohio State University, where he remained from September, 1889, until January, 1893. From July, 1893, until September, was a machinist on the Southern Pacific at Sacramento, Cal. He then served as assistant to the engineer of tests until September of the following year. For a month he was

H. H. Forney

locomotive fireman at Summit, Cal., and then served as roundhouse foreman at Winnemucca, Nev., until September, 1896. From September, 1896, until July, 1898, he was assistant master mechanic at Wadsworth, Nev., and then became general air brake inspector, which position he held until July, 1902. Mr. Forney then became master mechanic at Sacramento, Cal., where he remained until September, 1905. He was then appointed general air brake inspector, which position he held until August, 1915, when he was granted a leave of absence. From December, 1915, until November, 1925, he was mechanical engineer in the valuation department, and on November 1, 1925, was placed on the pension list of the Southern Pacific.

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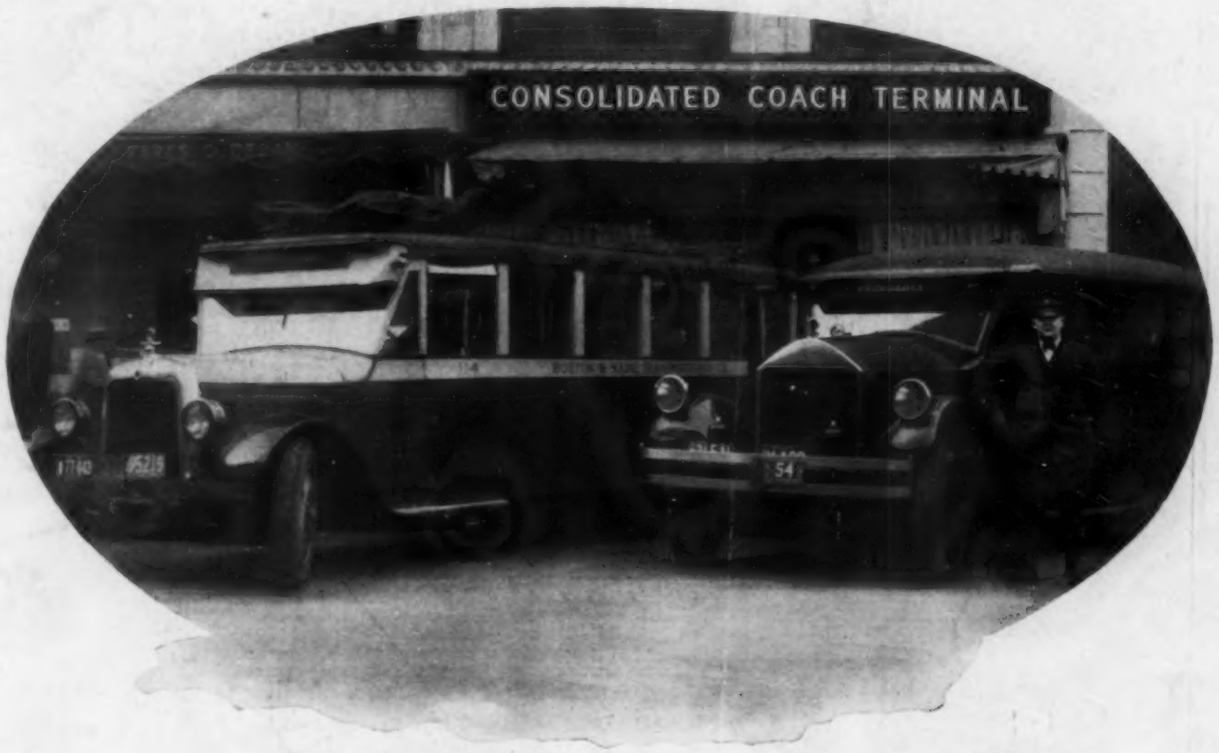
Two Sections—Section Two

Railway Age

Motor Transport Section

Devoted to the Co-ordination of Railway and Highway Service

FIRST HALF OF 1927—No. 9 NEW YORK—FEBRUARY 26, 1927—CHICAGO SEVENTY-SECOND YEAR



The Boston and Maine Transportation Co. and the New England Transportation Co. Have Established a Consolidated Motor Bus Terminal in Boston.

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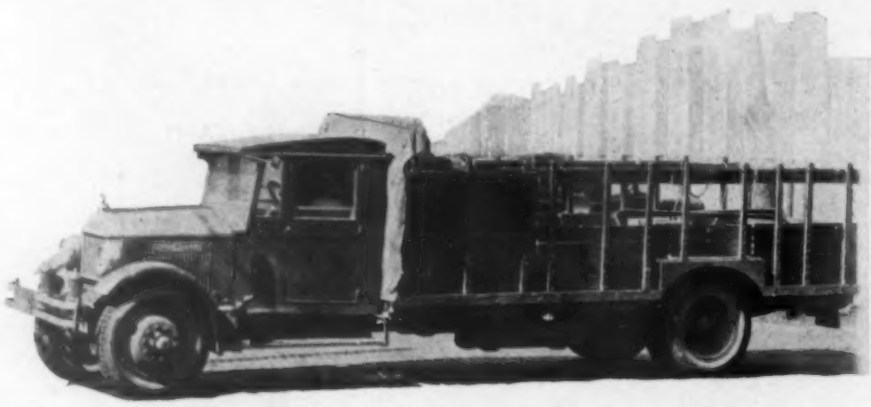
Articles in This Issue:

Two Buses Save $1,350 a Month; N. C. & St. L. Designs Baggage Truck Body; Railways Have Union Bus Terminals; More Miles from Solid Tires; How a Successful Bus Line Advertises; Breakdowns Can be Eliminated; Are Joint Rail-Bus Fares Legal?



The Freight Car of the Highway

The lumbering terminal truck with its team of horses, forming a picturesque though inefficient power element, is being rapidly supplanted.

Many railroads are supplementing their service with highway transportation—Handling on rubber, railroad loads, at railroad speed, with railroad security—with Westinghouse Automotive Air Brakes.

Huge trucks made possible by modern methods of engineering have reached colossal proportions. Motive power has reached a new high standard of development, capable of moving under load, chassis of unprecedented weight and bulk. With efficiency in the mechanical unit has come a body as modern, with capacity only rivaled by the rail cars themselves.

Keeping pace with modernization comes Westinghouse, as ever, furnishing the equipment of safe retardation, where evolution in transportation has with its consequent weight, bulk, and power, outgrown ordinary braking methods.

WESTINGHOUSE AIR BRAKE COMPANY
Automotive Division, Wilmerding, Pa.

WESTINGHOUSE
AUTOMOTIVE AIR BRAKES

Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service
Vol. 82 February 26, 1927 No. 9

Co-ordinated Transportation on the Boston & Maine

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in Quality . . .

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Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service

Vol. 82, No. 9. February 26, 1927

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Railway Bus Lines Should Co-operate

UNION bus terminals, such as are now found in nearly all cities, are evidence of the spirit of co-operation between independent operators of buses. The same sort of co-operation should exist between railway operators of buses, and it is worthy of note that two pioneer railway bus operators, the New England Transportation Company and the Boston & Maine Transportation Company, are working together in this way. As described in this issue, these two companies now own and operate jointly a union bus terminal at Boston. The result has been that these lines now have a larger and better located terminal than either would wish to pay for individually. Not only is such joint operation of stations more inexpensive and not only does it enable better facilities to be provided for patrons, but also it acts as an advertisement of the extensive service offered by the railway bus companies. At the present time when bus lines operated by the railways are still few in number and widely scattered there are few opportunities for such co-operation. With the spread of railway bus operation, however, many such opportunities will present themselves.

Trend of Bus and Truck Regulation

A TREND toward sharper and more comprehensive regulation of companies operating motor buses and motor trucks on the highways is notable at the present time. Only the individual states are involved, no regulation of an interstate character being expected in the near future. Not only more stringent regulation, but also higher special tax rates, are involved in the laws which have already been enacted and seem likely to be passed in several states. In Colorado, the Supreme Court has ruled that the state Public Utilities Commission has jurisdiction over every person or corporation operating motor vehicles for transportation in return for compensation and has issued comprehensive rules and regulations to govern them. In Missouri and Tennessee, among other states, bills for complete bus and truck regulation and taxation are pending. Indicative of the change in the attitude toward the highway carriers was the law for bus and truck regulation and taxation which was recently passed by a popular referendum in the state of Oregon. This bill was sweeping in its provisions. The days of unregulated transportation on the highways seem to be numbered. The railroads are interested in this change not only because of its effect upon their highway competitors, but also because they are themselves present or prospective operators of common carrier motor vehicles.

Trucks for Baggage, Mail and Express

ONE factor which has made it difficult for railways to replace train service with less expensive bus service has been the inability of buses to handle the considerable amounts of mail, baggage and express which have to be taken care of on branch lines. Buses are able to handle a certain amount of baggage, but they do not usually have room for any quantity of mail and express traffic. Consequently complete abandonment of rail passenger service has been impossible and the rail motor car has been resorted to more than the motor bus as a replacement unit for steam trains. The Nashville, Chattanooga & St. Louis has met this problem of mail, baggage and express handling in a unique way, which provides for such transportation as well as for the transportation of passengers by motor bus. On its Tracy City branch in Tennessee, passenger service has been completely abandoned and passengers are carried in motor buses on a highway which parallels the railway line. Provision for the handling of mail, baggage and express is accomplished by the operation of specially designed, high speed trucks which follow in the wake of the buses and operate on the same schedules. This plan of operation is described in another part of this issue. By this means the N. C. & St. L. handles the traffic formerly carried by its passenger trains at a cost estimated at less than half of that of train operation, while providing a service that patrons have demanded. Such a joint operation of buses and trucks for the handling of passengers, mail, baggage and express is one answer to the question of how to eliminate expensive, lightly patronized branch line passenger service.

Advertising Bus Service

THE experience of bus operators has been that they must look for prospective passengers more and more among those who in recent years have largely used their own automobiles. Bus lines competing with the railways have taken a certain amount of their traffic. It would seem that many of the patrons of these independent buses could be won over by the railway bus lines through consistent advertising of the railway bus schedules and, more important, of their greater reliability of service and financial responsibility. The users of private automobiles can possibly be best approached by advertising which points out the heavy expense of automobile use. By advertising the convenient schedules of railway buses, by pointing out their ready availability and by showing that riding in a motor bus is much cheaper than riding in one's own car, the chances of winning back the users of private automobiles to the

common carrier bus will be improved. Some railway bus lines, including the Northland Transportation Company whose advertising methods are described in this issue, advertise extensively in these ways. Others have as yet failed to do so. Proper advertising of bus lines operated by the railroads, as in many other cases, may mean the difference between profit and loss.

Prompt Repairs Are Essential

ONE point which those experienced in the maintenance of buses and trucks emphasize most strongly is the necessity of making repairs to failing parts promptly. Experience has proved over and over again that delayed repairs are uneconomical because they make the ultimater repairs more expensive, both in actual cost and in the length of time equipment is held out of service, and frequently because they result in breakdowns on the road, with resulting inconvenience to passengers. The chances of breakdown should be kept at the minimum. This can be done only by frequent careful inspection and immediate repairs, even in the case of the smallest, seemingly unimportant failures of parts.

Minimum Service or Adequate Service?

RAILWAYS engaging in the operation of motor buses must decide a question on which may hinge the success or failure of the venture. Its importance, entirely aside from its effect upon bus earnings, is in large measure due to the fact that it is frequently the root of the evil of unfavorable public sentiment. The question is: "Shall the minimum bus service be given in order to hold operating expenses down or shall the maximum of service be rendered in order to develop and meet the public need for highway transportation?"

In some respects the question, as stated, answers itself, but it is scarcely to be expected that all railways will see it in the same light. To many of them the virtue of bus operation lies solely in its economy. Able to replace a passenger train, costing one dollar or more a mile to operate, with a motor bus costing 25 to 30 cents a mile, with a corresponding reduction in the losses incurred in the train operation, some railways may consider this accomplishment adequate and be satisfied to do no more. But the motor bus can do more than merely reduce operating losses for the railways. In many localities it can return net earnings, if operated along the right lines. Operation along the right lines means the operation of a sufficient number of buses to provide frequent service for the convenience of patrons. Just how frequent this service should be depends upon local conditions. In certain localities an hourly, or even more frequent service, will be no more than adequate. In others, a somewhat wider spacing of schedules will be more desirable from the standpoint of the operator and not prejudicial to the convenience of the passengers. Such frequent schedules will obviously create a favorable sentiment toward railroad bus operation in the minds of the public. But they will do more than that. Experience has shown that adequate, even generous, schedules are the only thing that can be relied upon to develop the maximum available traffic, and only from such traffic can satisfactory net earnings accrue. Railways should not be satisfied merely with a reduction in an operating loss brought about by the substitution of a bus for a train schedule.

A New Ally of Passenger Trains

THERE is little or no doubt that the popularity of the private automobile as a means of transportation has been the chief factor in the loss of so great a part of the railways' local passenger business. Hence any development that might have the effect of reducing to some extent the popularity of the automobile, and consequently be reflected in the recovery of a proportionate part of the volume of the railways' passenger traffic, will be of interest. The widespread growth of the "rent-a-car" or "drive-yourself" automobile business, and its stabilization under financially strong, centralized control and management are considered to be such a development.

The plan of operation of such automobile renting agencies is simple. Cars of standard makes and models are maintained at stations in virtually all the principal cities of the United States and Canada, which are available to properly identified persons at a fixed charge per mile operated. The amounts varying from as low as 8 cents a mile to as high as 20 cents a mile, depending on the kind of car rented. This mileage charge includes gasoline and oil, insurance and so on.

What has this to do with the railways? Simply this: It is contended with undoubted truth that many tourists, many commercial travelers, who use their automobiles in making their journeys from point to point do so not because they want to drive all the way but because they wish to have automobiles available for their use when they reach their destinations. It is believed that if automobiles were at their command when they required them, they would use the cheaper, faster, more comfortable railway service in reaching their destinations. This is where the advantage to the railways of the "drive-yourself" business becomes apparent, because through this agency automobiles are at the command of travelers at their destinations.

The "rent-a-car" service, then, can be made an important ally of the railways by proper promotion, and at least one company operating such service is directing its efforts to that end. This company, through its local agents and its advertising, is urging the use of trains by travelers to reach their destinations and the rental of its cars there for use in the vicinity. For example, it recommends to a prospective traveler from Kansas City to Topeka that he take a train to Topeka, rent a "drive-yourself" car there to assist him in transacting his business, returning to Kansas City or proceeding to his next stopping point by rail. As reasons for this it cites the speed and economy secured by making the journey by rail and the convenience of the availability of a car at his destination. Companies whose salesmen have in the past used their own cars in making such trips are being approached on this basis, and with success. Several such concerns of large size have already adopted the rail-rent-a-car plan as standard.

A number of the railways have been approached by this company with the proposition that they reciprocate by instructing their agents to recommend the same procedure to travelers who approach them and by having available in their stations and trains directories of "rent-a-car" stations. The railways would seem to have everything to gain and nothing to lose in doing this. The "drive-yourself" service is distinctly supplementary to rather than competitive with railway service. If the contentions of the company referred to are as sound as they seem to be, such a hook-up of rail and automobile service may very likely be the solution of at least a part of the problem arising from the railways' passenger business losses.

Two Buses Save $1,350 a Month

Rutland uses them to replace train and effect other railroad economies

THE Rutland is saving approximately $1,350 a month by discontinuance of the passenger service formerly provided by having a passenger coach attached to two local freight trains, one southbound and one northbound between Bennington, Vt., and Chatham, N. Y., a distance of 57.3 miles, only one local freight being operated now, and without passenger equipment. This has been accomplished through the formation of a subsidiary corporation known as the Rutland Transportation Corporation, which operates a bus over a route paralleling the railroad. The bus makes one round trip, or 134 miles each week day, the distance by highway being approximately 10 miles longer than by rail.

Route of the Rutland Motor Coaches

The territory served by the Chatham sub-division of the railroad is known as the Lebanon valley. It is a rugged country of great scenic beauty, but sparsely populated, and there is practically no industrial development. The railroad extends in a general northerly and southerly direction (as shown on map) while the trend of travel is easterly and westerly to such centers as Pittsfield in Massachusetts, and Albany and Troy in New York.

Volume of Passenger Business Very Light

The volume of passenger business on this sub-division has not, for many years, justified the train service provided by the railroad company. Some 10 years ago the railroad proposed discontinuing one of the Bennington-Chatham round trips, but strong opposition developed at the hearings before the Public Service Commission. The little use made of the train service did not deter the people from vigorously opposing any move to curtail it. They wanted service to enable them to get out of the valley in the morning and back home at night. Conversely they wanted service into the valley in the morning and out in the evening.

Regardless of the small patronage of these trains the necessary permission to curtail them was not granted by the authorities, but a compromise was effected with representatives of the various communities whereby some retrenchment in service was effected.

Subsequently the passenger travel continued to decrease and it became evident that the local freight service could be performed by running a train each day in alternate directions.

Local Service in Each Direction Alternate Days Now Possible

In accord with established practice on other roads alternate day local freight service was effective on other parts of the Rutland system, but could not be availed of

on the Chatham sub-division because of the requirement that a passenger car be handled in each direction weekdays. Consequently the plan to establish bus service to take the place of the passenger car on the local freight trains was considered and finally decided upon.

The Rutland Transportation Corporation was organ-

TABLE 9 BENNINGTON AND CHATHAM

READ DOWN			Miles	STATIONS		READ UP		
306	¶ Motor Coach	302				301	¶ Motor Coach	305
Ex. Sun.	Ex. Sun.	Ex. Sun.				Ex. Sun.	Ex. Sun.	Ex. Sun.
PM	AM	AM				AM	PM	PM
2 05	8 15	.....	0	Lv ..... Bennington	Ar	11 00	4 25	.....
12 05	8 01	.....	4.3	" ..... Anthony	Lv	f10 48	4 07	.....
12 14	9 40	.....	7.0	" ..... Bee Hive Crossing	"	f10 36	3 56	.....
2 20	.....	.....	11.7	Ar ..... Petersburg Jct.	Lv	10 25	.....	.....
5 15	.....	.....		Lv ... Petersburg Jct. (B. & M.) ..	Ar	10 17	.....	.....
5 50	.....	.....		Ar ..... North Adams	Lv	9 45	.....	.....
3 30	.....	.....		Lv ... Petersburg Jct. (B. & M.) ..	Ar	8 58	.....	.....
4 45	.....	.....		Ar ..... Troy	Lv	8 29	.....	.....
1 05	.....	.....		Lv ..... Troy (B. & M.)	Ar	11 40	.....	.....
2 15	.....	.....		Ar ..... Petersburg Jct.	Lv	10 23	.....	.....
2 00	.....	.....		Lv .... North Adams (B. & M.) ..	Ar	2 00	.....	.....
2 30	.....	.....		Ar ..... Petersburg Jct.	Lv	1 24	.....	.....
.....	8 40	.....		Ar ..... Hoosick (B. & M. Sta.) ..	Lv	.....	3 40	.....
.....	7 45	.....		Lv ..... Troy	Ar	.....	5 35	.....
.....	8 54	.....		Ar ..... Hoosick (B. & M. Sta.) ..	Lv	.....	5 00	.....
.....	9 00	.....		Lv ..... Hoosick (B. & M. Sta.) ..	Ar	.....	4 45	.....
3 35	.....	.....	11.7	Lv ..... Petersburg Jct.	Ar	10 10	.....	.....
12 35	9 10	.....	13.5	" ..... No. Petersburg	Lv	f10 00	3 30	.....
3 45	9 27	.....	17.8	" ..... Petersburg	"	9 50	3 21	.....
4 00	9 43	.....	22.5	" ..... Berlin	"	9 45	3 05	.....
f4 06	9 50	.....	24.8	" ..... Center Berlin	"	f9 39	2 58	.....
f4 12	9 56	.....	27.1	" ..... Cherryplain	"	f9 34	2 52	.....
f4 18	10 03	.....	30.5	" ..... No. Stephentown	"	f9 28	2 46	.....
4 28	10 14	5 25	33.3	" ..... Stephentown	"	9 20	2 34	7 40
f	10 25	f	35.7	" ..... Wyomanock	"	f	2 23	f
4 42	10 28	6 38	38.3	" ..... Lebanon Springs	"	9 11	2 19	7 30
4 47	10 42	6 40	39.7	" ..... New Lebanon	"	9 07	2 06	7 25
f4 51	10 46	f6 44	41.2	" ..... Center Lebanon	"	f9 03	2 00	f7 21
f4 56	.....	f6 49	43.3	" ..... Adams Crossing	"	f8 58	.....	f7 17
5 02	11 00	6 55	46.3	" ..... Brainard	"	8 51	1 48	7 08
f5 08	.....	f6 59	48.0	" ..... Riders	"	f8 45	.....	f7 04
5 16	11 22	7 05	51.2	" ..... Old Chatham	"	8 36	1 30	6 53
5 35	11 50	7 20	57.3	Ar ..... Chatham	Lv	8 25	1 20	6 43
6 15	2 25	7 46		Lv ..... Chatham (B. & A.)	Ar	7 46	12 46	6 06
7 25	3 10	8 25		Ar ..... Albany	Lv	7 00	11 55	5 15
6 10	2 35	8 00		Lv ..... Chatham (B. & A.)	Ar	7 35	10 45	5 24
6 57	3 15	8 47		Ar ..... Hudson	Lv	6 48	9 58	4 48
6 00	2 17	7 57		Lv ..... Chatham (B. & A.)	Ar	7 45	10 57	6 23
7 05	3 15	9 05		Ar ..... Pittsfield	Lv	6 55	10 05	5 43
5 53	2 43	8 10		Lv ..... Chatham (N. Y. C.)	Ar	.....	12 46	7 06
10:14	6:39	12:01		Ar ..... New York	Lv	AM	8:50	2:20

¶ Highway motor coach service operated by the Rutland Transportation Corporation.

Chatham Sub-Division Public Timetable Showing How Bus Is Co-ordinated with Trains

ized for this purpose, all stock being owned by the railroad company.

Permission to operate buses was secured from various towns and from the Public Service Commissions of New York and Vermont.

Bus operation was put into effect September 20, 1926, and at the same time the local freight service was put on an alternate day basis, the passenger car being discontinued.

How Bus Service Effects Savings

The effects of this change in railroad operations may be summarized as follows:

1. Elimination of one local freight train, including one locomotive, two passenger cars and one engine and train crew.
2. Utilization of remaining local freight train to a better tonnage ratio, relieving through freight trains, reducing double-heading and minimizing the number of extra freight movements.

The economies resulting to the railroad company have been accomplished without curtailment of passenger service to the public, the bus being substituted for the rail service, and in fact it makes better time than was made by the mixed trains. The schedule of present passenger service as provided by train and bus is shown in an accompanying illustration.

Bus Operation, While Not Yet Profitable in Itself, Attracts More Business

The bus operation in itself, viewed apart from the savings to the railroad, is not profitable as yet. The bus is, however, taking in a gross revenue larger than that of the railroad passenger service which it replaced. In October, 1925, the mixed trains, now replaced, handled a total of 392 passengers and collected $160.46 gross revenue. In October, 1926, the bus line handled 481 passengers and took in gross revenue of $273.22. The increase in volume of passengers handled was 23 per cent and in gross revenue 70 per cent.

The Buses Used and Their Maintenance

To maintain service two exactly similar buses are used, having bodies built (by the Bender Body Company, Cleveland, Ohio) to the railroad company's specifications, mounted on Type X Yellow Coach chassis and equipped with six-cylinder Knight engines.

The interior of each bus is finished "semi-de-luxe," has seating accommodations for 20 passengers, wide aisles, ample head room for standing, and is equipped with individual type air-cushion seats and parcel racks. The exterior of the buses is painted white, with the top and fenders black. The belt is mountain ash.

The wheel-base is of such length that the wheels are directly under the rear seats, which are placed slightly higher than the others, thus eliminating the usual discomfort to passengers occupying space directly over the wheels.

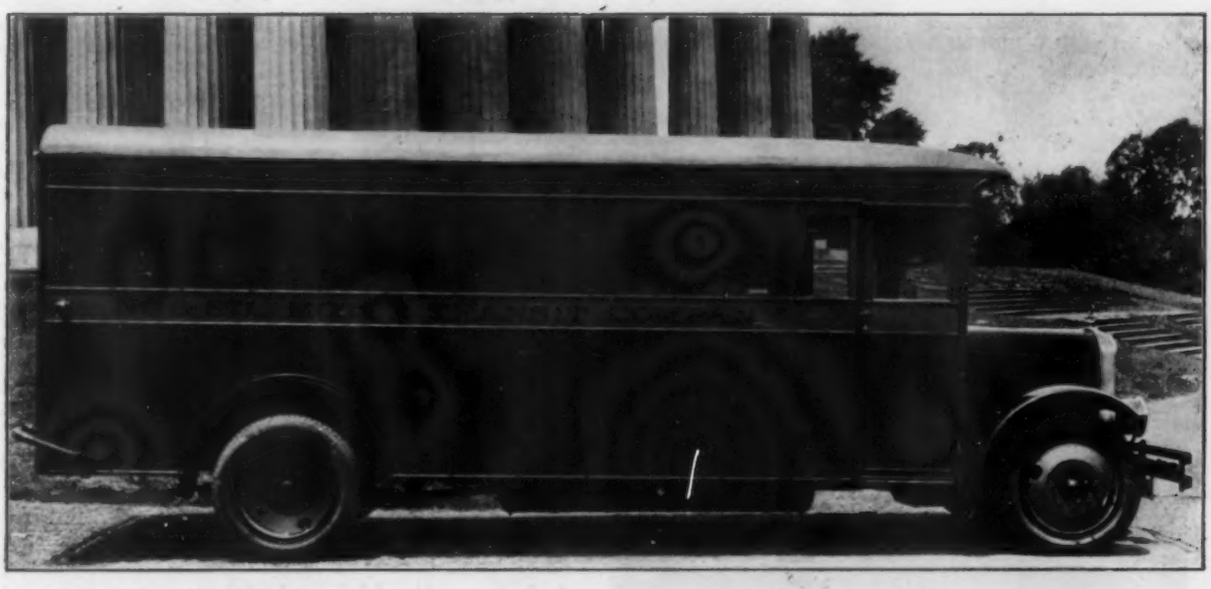
There is a luggage rack for hand baggage on top of each bus, but light traffic makes it possible to handle this inside as a general rule.

The bus fares are computed on the same general basis as rail rate, i.e., 3.6 cents per mile. As the highway is longer than the rail route, the cash fares are in some cases proportionately higher, but railroad tickets are honored on the bus.

Trunks and heavy baggage are checked at the railroad stations, for passengers holding railroad tickets, and are handled by train in the usual way.

The buses are housed in a public garage at Bennington (a railroad terminal) where the care and maintenance work is performed by men employed in the mechanical department of the railroad. It is possible to perform this work without interference to the railroad work or additional expense by reason of each bus being in service on alternate days only. The Rutland Transportation Corporation maintains its own supply of gasoline and oil.

Two Containers on a Mack Truck, New York



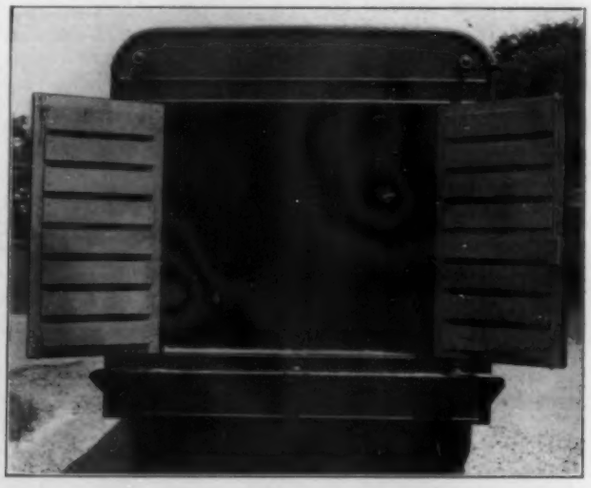
The N. C. & St. L. Baggage Truck

N. C. & St. L. Designs Baggage Truck Body

Trucks used fro carrying baggage on Tracy City branch have specially constructed body mounted on bus chassis

THE most unusual feature involved in the substitution of buses and trucks for passenger train service by the Nashville, Chattanooga & St. Louis on its Tracy City branch, extending from Tracy City, Tenn., to Cowan, a distance of 20 miles, is the use of trucks for the handling of mail, baggage and express.

The Front View Shows How Similar the Truck Is to a Bus



The Interior Is Similar to That of a Baggage Car

This operation was described in the *Railway Age* of July 24, 1926.

The buses and trucks, which are operated by the Nashville, Chattanooga & St. Louis Motor Transit Co., a subsidiary of the railway, make four round trips daily between Tracy City and Cowan, two of the trips extending beyond Cowan to Coalmont, a distance of six miles.

The buses, which are of the "city" type, manufactured by the Yellow Truck & Coach Manufacturing Co., Chicago, have no accommodations for mail, baggage or ex-

press, all the space being utilized for passengers. In view of this fact it was necessary to arrange special accommodations for the handling of mail, baggage and express on this line, since all passenger train service was abandoned with the installation of the highway service.

Such accommodations are provided through the use of two specially designed motor trucks. Of these two trucks, one is normally in service and the other held in reserve. The truck in operation follows the bus on each

The Clean Design Is Notable in the Rear View

of its trips very closely and is scheduled to arrive and depart from each of the stopping points on the branch line at the same time as the bus. By reason of this fact, the passengers riding on the buses who have checked baggage through to their destination are able to claim it at once upon their arrival. The effect of this plan is to furnish passengers with the same convenience as to ready availability of their baggage as if the baggage were carried on the bus they ride in, without sacrificing any of the seating space in the buses to provide a baggage compartment.

Trucks Specially Designed

The N. C. & St. L. mail, baggage and express trucks are mounted on a type "Z" chassis of the Yellow Truck & Coach Manufacturing Co. This chassis has a six-cylinder, sleeve valve engine which has an ample reserve of power to negotiate the steep hills encountered in the territory served by the N. C. & St. L.'s highway equipment. The chassis has a wheel base of 200 in. The front wheels are single and the rear dual, all of them having disc type wheels and pneumatic tires.

The unusual feature of the trucks is the body, which was specially designed for the chassis and for the service in which the trucks are used by C. M. Darden, mechanical engineer of the Nashville, Chattanooga & St. Louis. The length overall of the truck is 291 in., and the width 86 in. The trucks have a capacity of five tons. They are painted in accordance with the color standards of the N. C. & St. L. Motor Transit Co., palmetto green with catawba green belt line.

The truck was designed to give it an appearance conforming as nearly as possible with that of the bus body mounted on the type "Z" chassis. The exterior of the truck is notable for its distinctive paneling and its clean lines. The low hung body gives the appearance of the speed of which the truck is capable.

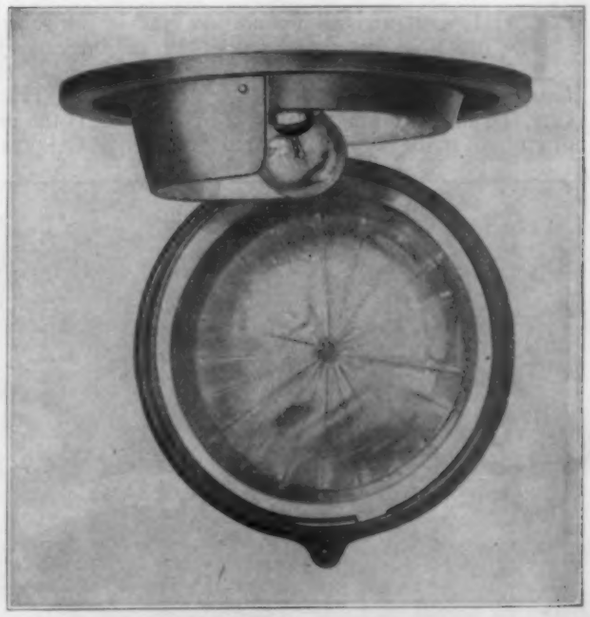
The driver's cab is completely enclosed to afford him protection in bad weather. The heavy double doors at the rear give on to an interior of large capacity and complete protection. The appearance of the interior of the truck is notably similar to that of standard railway baggage cars.

As a whole, the appearance of the truck gives an impression of speed, clean lines and sturdiness not often found in freight carrying vehicles of the capacity of the N. C. & St. L. trucks. The name, "N. C. & St. L. Motor Transit Co." is lettered on the sides of the trucks, and the inscription, "Baggage-Mail-Express" on the front end over the windshield. The trucks are fully equipped with a spotlight and rear view mirror, and have in addition two running lights at the front end of the truck and a running light on each side at the rear. The trucks were designed and built at the St. Bernard shops of the N. C. & St. L.

Adams & Westlake Anti-Glare Shield

TO eliminate the glare of dome lamps in motor buses which is reflected in the windshield, the Adams & Westlake Company, Chicago, is manufacturing an anti-glare shield lamp, known as Adlake Model 4539-S. These fixtures are to be installed as the front pair of lamps.

The accompanying illustration indicates the character of the device. This shield, which is made of metal, is attached to the inside of the lamp so that when the glass



Adlake Model 4539-S Bus Dome Lamp with Shield

cover is closed the lamp is no different in appearance from any lamp without the shield. The shield does not interfere with general illumination in the bus but effectively eliminates the glare of the reflection in the windshield.

All B. & M. and New England buses in Boston Depart from and Arrive at the Terminal

Railways Have Union Bus Terminal

Well equipped coach station in heart of Boston solves station problem for B. & M. and New England

SINCE October 1, the Boston & Maine Transportation Company and the New England Transportation Company, the bus-operating subsidiary of the New York, New Haven & Hartford, have been operating a consolidated coach terminal in the heart of the uptown district of Boston, Mass., from which all bus lines of the companies radiating from Boston start.

This union bus terminal represents the culmination of

The Ticket Window and Agent's Desk are at the Front of the Terminal

a development of the terminal facilities of the two companies for buses at Boston which has been going on since July, 1925. In that month, the Boston & Maine began motor bus operation from Boston to Portland, Me., in competition with three independent motor bus lines operating between these points, all of which used hotels in Boston for starting points. Originally the Boston & Maine used the North Station as the first starting point of its buses. In order to meet the competition of the independents, however, and to provide a new convenience, the Boston & Maine made arrangements with a local taxicab company to carry passengers holding

The Waiting Room Is Comfortably and Tastefully Furnished

motor coach reservations from any point in Boston proper to the North Station. The taxicab charge being absorbed by the Boston & Maine Transportation Company.

As more lines were established from Boston, this practice became more and more expensive and it was decided to provide terminal facilities nearer the center of the shopping, business and theatre districts. In the spring of 1926 temporary space was obtained at 36 Park square and advertised as the "consolidated Coach terminal," the New England Transportation Company becoming jointly interested in this uptown terminal.

The increasing business of the two lines soon made these quarters too small, with the result that on October 1, the present bus terminal was established at 3 Providence street. This location is opposite the new Statler hotel, and is located in a section of uptown Boston which is rapidly becoming a center of activities an dwell suited for a motor coach terminal.

The terminal has a frontage of 27 ft. on Providence street, and a depth of 40 ft. It is equipped with a ticket office, a desk for a traffic representative of the companies, and toilet facilities. The interior decoration is attractive. As will be seen from the photographs, upholstered reed chairs, tables and lamps make the interior particularly inviting and comfortable. Space has been leased to the Union News Company for a soda fountain and lunch counter.

The ticket office, situated in the front of the station, is open from 6:30 a.m. to 11:00 p.m., one ticket clerk being on duty on each of two tricks, one of these being furnished by the New England Transportation Company and the other by the Boston & Maine. One starter is on duty at all times that the station is open, and as more lines are established a second starter will be employed.

The station is used by all bus lines of the two companies entering Boston, including that of the New England Company, which provides hourly service to Providence, R. I., and those of the Boston & Maine to Manchester, N. H., and Portland, Me. The B. & M. route to the White Mountains also starts from this point during the summer.

Yellowcab Trucks of One and Two Tons Capacity

THE Yellow Truck & Coach Manufacturing Company, Chicago, has placed on the market trucks of one and two-ton capacity equipped with overhead valve, six-cylinder Buick engines.

The one-ton Yellowcab Express and two-ton Yellowcab Merchantman, which will be manufactured at the General Motors Truck Company, Pontiac, Mich., are

The Model T-20 Yellowcab Express Le Luxe Type One-Ton Truck Equipped with a Six-Cylinder Buick Motor

equipped with self-starters, extra heavy truck type of axles, and on the two-ton models, four-wheel Bendix brakes.

The one-ton model T-20, with a chassis road weight of 2,750 lb., has a wheelbase of 132 in. The two-ton model T-40, with a spiral bevel axle and pneumatic tire equipment, has a chassis road weight of 4,325 lb. and is furnished in three wheelbases: 136 in., 150 in. and 162 in. The two-ton model T-50, with a worm axle and solid tires, has a chassis road weight of 4,630 lb. The wheelbases are the same as the model T-40.

A rugged type of radiator, shaped like the one now used on modern Yellow Coaches, is found on the new models. The shell is pressed steel, copper and nickel plated. The radiator cores are of the fin and tube type, using staggered oval tubes with copper fins. The construction of the core is such that no damage should result from freezing. The radiators are supported on independent cross members. The mounting is cushioned by rubber.

The one-ton chassis is equipped with the standard Buick six-cylinder engine, 3⅛ in. bore and 4½ in. stroke, with a piston displacement 207 cu. in. and an S. A. E. horsepower rating of 23.4. In the models T-40 and T-50 the Buick master six-cylinder power plant with a 3½-in. bore and 4¾-in. stroke is used. The piston displacement of this motor is 274 cu. in. and the S. A. E. horsepower rating 29.4.

The multiple disc clutch has ten amply proportioned friction surfaces. The design is such that only a slight pressure on the clutch pedal is necessary to release the clutch plates. The clutch is always in running balance; the engagement is smooth and the pick-up rapid; it is entirely enclosed in the bell housing.

The front axles are of high carbon steel of heat treated drop forged I-beam section. Axle knuckles on the one-ton truck are Elliott type, and on the two-ton models, reverse Elliott type. High angle Timken bearings are incorporated on the axle knuckles for ease of steering. The wheel bearings are Timken. On the one-ton model the knuckle and steering arms are a one-piece forging. The ball type tie rods are carried on vertical pins with the ball ends up.

A heavy duty three-speed truck type transmission is mounted in unit with the clutch and engine. The shafts are mounted on ball and roller anti-friction bearings.

The frame on the one-ton truck is pressed steel channel 6 in. deep, 3/16 in. thick with 2 in. flanges. The frame on the two-ton models is 6½ in. deep, ¼ in. thick with 3 in. flanges. There are four channel cross members on each model with liberal gussets throughout. The frame width is 34 in. parallel from the rear end to under the driver's seat.

A tubular shaft, with two metal universal joints, is the drive on the one-ton model, and with three metal universal joints on the two-ton models. On the two-ton models there is a self-alineing ball bearing at the center of the shaft which is lubricated from the outside of the frame. The joints are lubricated with either oil or grease. Hotchkiss drive is employed on the one-ton model. With both two-ton models, heavy duty type radius rods are used.

The springs of silicio-manganese steel are semi-elliptic front and rear on the three models.

The steering gear is of the cam and lever type. The brakes on the one-ton truck are double internal fully enclosed to exclude dirt and water. There is an equalizer on the service brake. Bendix, three-shoe type, four-wheel brakes are utilized for the two-ton models.

A Timken spiral bevel gear, semi-floating rear axle enclosed in a pressed steel banjo housing is used on the one-ton model. On the two-ton model T-40, a semi-floating, heavy duty spiral bevel gear rear axle of GMC make is used. The solid tire, worm drive axle of the two-ton model, T-50, carries a Timken semi-floating worm drive axle in a pressed steel housing. Liberal size axle shafts are used in both models, T-40 and T-50.

The tires on the one-ton truck are 30 in. by 5 in. front and rear, non-skid pneumatic truck cord type. Provisions are also made for oversizing with 32 in. by 6 in tires. On the Model T-40, the front tires are 32 in. by 6 in. and the rear 34 in. by 7 in. non-skid pneumatic truck cord type. The solid tires on the Model T-50 are 34 in. by 4 in. front and 34 in. by 7 in. rear.

The gasoline tank has 15 gallons capacity on the one-ton model and 20 gallons capacity on the two-ton models.

Flanged Wheel Bus Operated by S. D. Short Line

A REO motor bus, equipped with flanged driving wheels and a four-wheeled pony truck at the front end, is being operated by the Rapid City, Black Hills & Western, a line in South Dakota 34 miles in length, in the replacement of steam train service.

R. C., B. H. & W. Reo Bus Fitted with Flanged Wheels

This bus was installed to reduce operating costs. It has a seating capacity of 20, although as many as 40 passengers have been crowded into the car in an emergency. A four-foot luggage carrier is mounted at the rear of the bus.

The bus, which has a four-cylinder engine, negotiates the heavy mountain grades averaging 2 per cent, with a small four-cylinder trailer carrying a weight of 2,000 lb. The cost of operation of the bus has averaged 17 cents per mile.

THE OPERATION of a fleet of motor buses between New York and Chicago and St. Louis is planned by the Great Eastern Lines, a New York company. It is planned to begin service on the New York-St. Louis line about March 1, and on the New York-Chicago line about May 1. One bus will be operated out of each terminal daily. Although the schedules have not been announced it is stated that the average speed of the buses will be 27 miles per hour for the entire distance, which should make the total time in transit between New York and Chicago approximately 36 hours. The buses will be known as club-buffet cars and will have reclining chairs for 15 passengers. The buses will be equipped with a kitchenette in charge of a porter who will serve food to the passengers.

More Miles From Solid Tires*

Tire costs can be kept down by analysis of operating conditions and avoidance of common abuses

By L. W. Fox

Truck and Bus Tire Dept., Firestone Tire & Rubber Company, Akron, Ohio.

IT has proved impractical to make definite recommendations of tire equipment for vehicles of a particular load rating before they go into service. This is brought about through the variation in the wheel bases, location and type of body, and actual loads carried. Operators also differ in their ideas of economical loading, varying from rated load to 100 per cent overload.

Fig. 1—Plain Tread Tire for Front Wheels

The general method of procedure in the analysis of a truck is, first, to obtain the front and rear axle loadings of the empty vehicle. This may be accomplished through the use of portable scales or by driving on a standard platform scale. Then, by measuring the location of the body with respect to the rear axle, one can determine the front and rear distribution of the cargo weight and by adding to the empty weights, determine the total load on each axle. Referring to the standard table of load ratings, Table I, the proper size of tire may be selected.

TABLE I

SOLID TIRE CARRYING CAPACITIES

	36 Inch and Under	38 Inch and over
3 inch	1,000	....
3½ inch	1,300	....
4 inch	1,700	....
5 inch	2,500	3,000
6 inch	3,500	4,000
7 inch	4,500	5,000
8 inch	5,500	6,000
10 inch	7,500	8,000
12 inch	9,500	10,000
14 inch	11,500	12,000

*From a paper presented at the Society of Automotive Engineers meeting at Boston, Mass., on November 16.

Having determined the proper size of tire, it is now necessary to analyze the operating conditions with respect to speed, length of run, road conditions, etc., in order to select the proper type of tire. We will divide our discussion into front and rear service.

For front wheels—we find it more economical and more satisfactory to use plain tread tires in all classes of service. Figure 1 shows this type of tire. There is no reason for using a non-skid tire in front wheel service. Tires which have the tread broken up by design wear faster and are more susceptible to uneven wear caused by mechanical irregularities.

For rear wheels—where trucks are operating over improved roads at moderate speed, a tire of the general type shown in Fig. 2 will prove most satisfactory. This type of tire has a continuous tread and will give maximum mileage.

Non-skid Tires

There has been a growing demand for solid tires with a non-skid tread pattern, of the general type shown in

Fig. 2—Continuous Tread Tire for Rear Wheels

Fig. 3. This design affords more traction and non-skid, than the tire shown in Fig. 2, and is better for long distance hauling, where heat is the chief source of trouble, on account of its greater radiating surface.

If the truck is to be operated over unimproved roads, it is necessary to have more traction than is afforded by either of the foregoing types of tires. Tires best adapted to this type of service are those so designed that the soil accumulating in the design is readily displaced upon the succeeding contact with the road, leaving the design free to grip and give traction. This is accomplished most efficiently by a tire of the type shown in Fig. 4, with indentations so shaped that they are self-cleaning.

Wheel Width

Having determined the proper size and type of tire, attention should be given the wheel equipment, by having a wheel wide enough to support the tire properly. Tires are always wider than the wheel, but it is not good practice to exceed ¾ in. overhang on each side unless an auxiliary support is used. Where it is necessary to oversize tires, extension rings are used as an auxiliary support, being furnished in 1¼ in. and 2¼ in. widths. In using dual tires, it is necessary to oversize. For example, 7 in. dual tires should replace a 12 in. single. This further increases the tire rim overhang which is very undesirable. Inasmuch as the rim flanges are for the protection of the hard base union, it is possible to do away with the inner flanges of the dual mounting. Cutting away these flanges saves ⅝ in. per tire or 1¼ in. for two tires in overall widths, thus reducing the overhang proportionately.

Comparative Economy

The question may now be asked, "What is the most economical solid tire for truck operation?" Inasmuch as vehicles of ¾ ton to 1½ ton capacity are operated to a large extent on pneumatic and cushion tires, we will, therefore, consider solid tires as applied to heavy duty work on trucks larger than 1½ tons capacity.

Fig. 3—Non-skid Tire for Improved Roads and High Speed Service

For low cost per mile of tire operation, the smooth tread tires typified in Figs. 1 and 2 unquestionably rank first. This general type of tire gives the maximum of mileage with a fair amount of cushion and traction.

The non-skid tire of the type shown in Fig. 3 are second choice. Whenever the tread of a tire is cut up into a design there is less rubber in contact with the ground and consequently a higher intensity of pressure per square inch. This must result in faster wear. Also, these types of tires are more susceptible to uneven wear through excessive speed or overload.

Fig. 4—Non-skid Tire for Unimproved Roads

The traction type of tire with side indentations as shown in Fig. 4 is third choice. This tire is designed purely for traction in soft going and is not adapted to exclusive improved road service. Though ranking third in cost per tire mile, this is more than offset by the traction afforded and the ability to avoid delays in negotiating bad roads.

In the design of all giant solid tires, it is necessary to relieve in some way, stresses set up by the traction wave, and this is usually accomplished by means of center grooves of some type. Consequently when these tires wear through the design, it is necessary to recut the surface in some way, which oftentimes is only one or two circumferential grooves. Most service stations are equipped to handle this work in a short time and it is economical for the operator to have it done.

Is it profitable to oversize tires? This is easily proven in the pneumatic field by pointing out the gradual changes to larger tires on taxicab fleets. The same is taking place on bus fleets. In the solid tire field, the large companies have kept accurate tire costs and have found it profitable to oversize their solid tire equipment, which in itself is evidence enough.

Causes of Low Tire Mileage

Tires for trailer service are more or less in a separate class. There is no driving strain to be taken and in most cases no braking. Also, there are no delicate mechanical

parts requiring cushioning, so it is obvious that the tire requirement is different. We recommend the use of a plain tread tire, which is slightly lower in profile than the standard truck tire.

What are the causes of low tire mileage? There are many factors influencing this, some of which we are inclined to believe are not given serious consideration.

Excessive speed generates heat within the tire faster than the compound can dissipate it, resulting in disintegration or actual melting of the compound and formation of a gas which blows through the tread or sidewall, ruining the tire. Excessive speed also causes greater tire action and aggravates uneven wear, as well as fast wear.

The question may now be asked, "What speed will a solid tire stand?" There are so many factors influencing this that the tire manufacturers have refused to guarantee their solid tires for a definite speed. Factors entering into speed operations are the design of tire, diameter of tire, nature of compound, load carried, and the actual sustained speed as expressed in per cent, it being assumed that 100 per cent represents the speed under the existing conditions at which the tire can be satisfactorily operated at rated load. You will also note that for a decrease of 50 per cent in load the allowable speed is increased approximately 73 per cent.

There is a limit to load and speed which the solid tire will stand, and if the satisfactory operating conditions for the tire are exceeded, causing blowout, the operation is beyond the range of solid tires.

Overload, the effects of which are well known to most operators, cannot be overemphasized. It causes a general breakdown of the tire compound. This action may be started through one heavily overloaded trip, and will continue although the tire is not overloaded thereafter. It is not uncommon to see tires removed because of this condition, even though only half worn out. Overload also causes excessive spreading of the tire on the road and consequent uneven wear. The tire must then be either removed or resurfaced by cutting off the high spots.

"Heel and toe" action, as the uneven wear of the non-skid type of tire is referred to, is a direct result of load and speed. A careful examination of a tire will show that the non-skid projections wear off on the side that leaves the road rather than the side that first contacts. The continued application of power to the wheel distorts these projections in contact with the road, and, as the wheel revolves, they assume their original shape, at the same time scuffing the portion last in contact with the road. This causes the uneven wear referred to. The tendency toward this action can be moderated by tying the design together or making the projections lower, either of which reduce the effectiveness or life of the non-skid. In other words, the more nearly we approach a smooth tread tire the more nearly we come to eliminating the action.

We do find it possible and practical to change sides with the rear wheels, thus reversing the action and causing the design to wear even again.

Mechanical Irregularities

Alignment of the front wheels is very important. It is customary to gather the wheels at the front, or give them a "toe-in' of 1/8 in. to 3/8 in., according to conditions. It is advisable to watch front tires for unusual wear, as a misalignment condition may wear a set of tires completely out in a few hundred miles. It can usually be detected by uneven wear or a scuffed appearance of the tire.

Mechanical irregularities often result in premature tire failure. Among the most common of these are improper wheel alignment, loose wheel bearings, loose bushings, loose steering gear, front axles out of position and improper brake adjustment. We also find wheels out of round and out of true, which, of course, it not the fault of the operator.

Rims bent through striking curbs and obstructions in the road are quite common. This is particularly true where tires have been oversized and the overhang has not been supported from beneath. A bent rim starts separation, which soon causes tire removal.

Improper use of chains, such as their being drawn too tight or left on when not neded, results in excessive strain on the tire at one point and cutting out the compound. Car track riding overloads one side of the tire, breaking the compound down at that point.

Carrying Capacities

The difference in carrying capacities of tires of different diameters is the cause of much grief, and if often overlooked by the operator. To illustrate this, let us compare 36 in. and 40 in. tires. The 36 in. tire is approximately 10 per cent shorter in circumference than the 40 in. and, all things being equal, it would be reasonable to expect 10 per cent less mileage. In addition to the shorter circumference, however, there is less tire in contact with the ground, resulting in a higher intensity of pressure per square inch, and greater flexing of the tire. To maintain a given vehicle speed, the smaller tire must revolve faster, consequently flexing oftener, and has less time between flexes to cool. The result is more heat generated and less time in which to cool. It is readily seen then that the 36-in. tire is at a disadvantage in competing with the 40-in.

Rates of wear during summer and winter operation are liable to be overlooked by the operator in passing judgment upon tire service. We know definitely that there is a very appreciable difference. May and June tire removals, or in other words the tires which have run their greatest mileage during winter months, show an increase of approximately 11 per cent. The November removals, or tires which have run their mileage during the summer months, show a decrease of approximately 14 per cent.

In making a summary of factors entering into economic solid tire operation, it is first necessary to analyze the operating condition of the vehicles used in order to determine the proper size and type of tire equipment. Having started out on the right equipment and taken careful note of the common abuses which increase tire cost, the operator should have no difficulty in keeping his tire costs to a point consistent with his general operating costs.

An Overnight motor truck express service between Chicago and Grand Rapids, Mich., and Detroit and all cities within a hundred mile radius of Chicago has been established by the L. C. L. Express Service. High speed trucks fitted with all steel insulated bodies and equipped with refrigerating and heating facilities will be operated. In the future it is expected to extend the service to St. Louis, Mo., Indianapolis, Ind., and Columbus, Ohio, and intervening points.

A Proposed Tax Law now being considered in Colorado provides for the payment of special taxes by common carriers operating over the highways at the following rates: For freight service of any kind a tax of 5 mills per ton mile; for passenger service of any kind, a tax of 2 mills per passenger mile; for express or frieght service carried on passenger motor vehicles and in addition to the tax as compensation for passenger, a tax of 30 mills per ton mile. These taxes are to be paid monthly.

How a Successful Bus Line Advertises

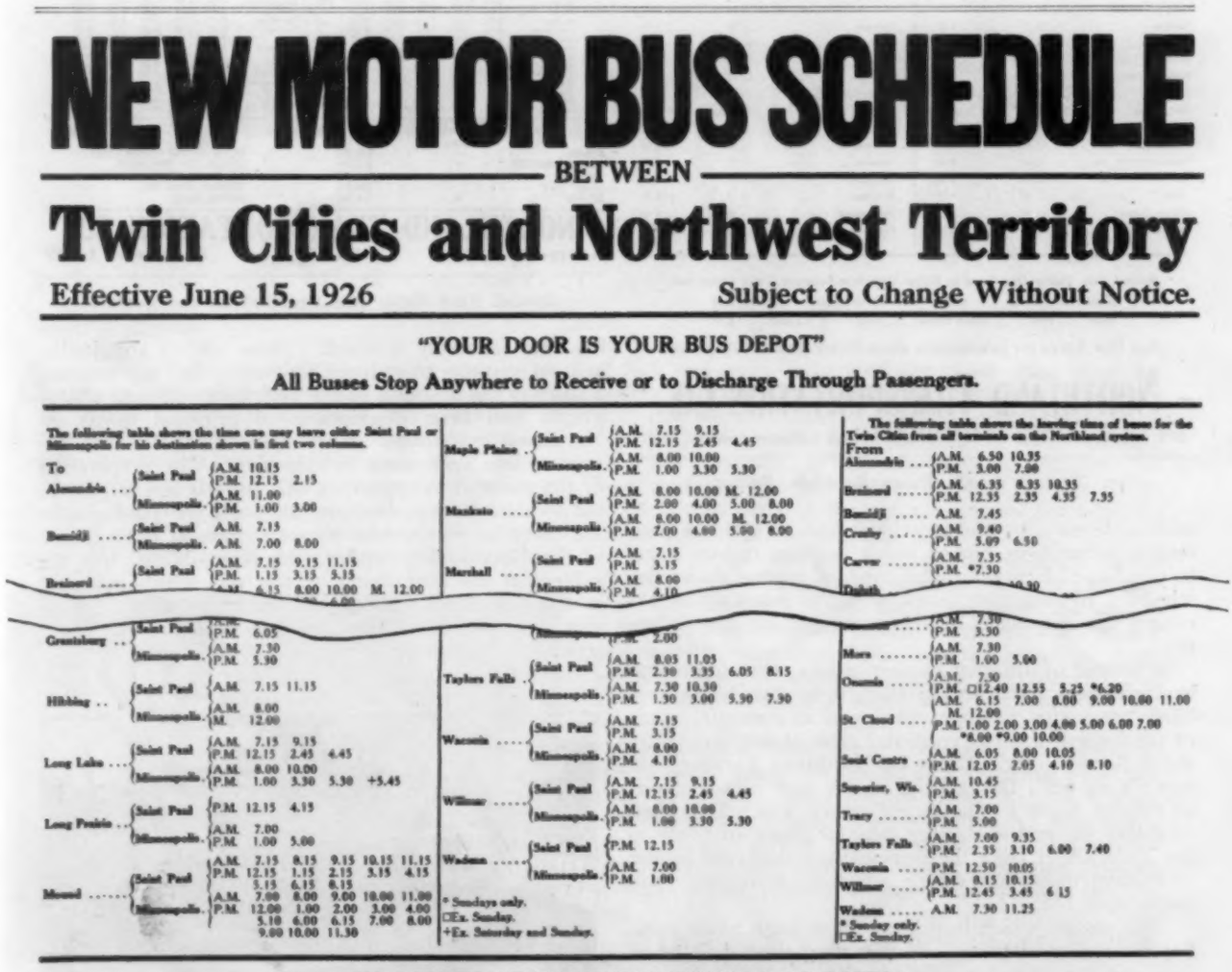
Northland Transportation Company issues unusual folders and posters

THE steadily growing business of the Northland Transportation Company, the bus operating subsidiary of the Great Northern, is the result largely of the consistent and intensive traffic development work carried on under W. J. Kay, assistant general manager. This work has taken form principally in various kinds of advertising, some of which is out of the ordinary. In fact, advertising is almost the only means by which the Northland Company seeks to win new business, since no passenger agents, assigned solely to the solicitation of traffic, are employed.

There is a certain amount of personal solicitation of business, however, by agents of the company, located in outlying towns along the bus lines, whose co-operation is enlisted by the five per cent commission paid them on gross ticket sales made by them. These agents are in all cases employees in stores or similar concerns which are used by the Northland as depots in the smaller towns on its lines. Such agents apparently show as much interest in developing business for the Northland as if they were employed for their full time by the company.

Several Forms of Advertising Used

The first kind of advertising used by the Northland Company was the direct by mail distribution of folders



NEW MOTOR BUS SCHEDULE

BETWEEN

Twin Cities and Northwest Territory

Effective June 15, 1926 — Subject to Change Without Notice.

"YOUR DOOR IS YOUR BUS DEPOT"

All Busses Stop Anywhere to Receive or to Discharge Through Passengers.

The following table shows the time one may leave either Saint Paul or Minneapolis for his destination shown in first two columns.

To								
Alexandria	Saint Paul	A.M. 10.15						
		P.M. 12.15	2.15					
	Minneapolis	A.M. 11.00						
		P.M. 1.00	3.00					
Benidji	Saint Paul	A.M.	7.15					
	Minneapolis	A.M.	7.00	8.00				
Brainerd	Saint Paul	A.M.	7.15	9.15	11.15			
		P.M.	1.15	3.15	5.15			
		A.M.	6.15	8.00	10.00	M.	12.00	
Grantsburg	Saint Paul	P.M.	6.05					
	Minneapolis	A.M.	7.30					
		P.M.	5.30					
Hibbing	Saint Paul	A.M.	7.15	11.15				
	Minneapolis	A.M.	8.00					
		M.	12.00					
Long Lake	Saint Paul	A.M.	7.15	9.15				
		P.M.	12.15	2.45	4.45			
	Minneapolis	A.M.	8.00	10.00				
		P.M.	1.00	5.30	5.30	+5.45		
Long Prairie	Saint Paul	P.M.	12.15	4.15				
	Minneapolis	A.M.	7.00					
		P.M.	1.00	5.00				
Mora	Saint Paul	A.M.	7.15	8.15	9.15	10.15	11.15	
		P.M.	12.15	1.15	2.15	3.15	4.15	
			5.15	6.15	8.15			
	Minneapolis	A.M.	7.00	8.00	9.00	10.00	11.00	
		P.M.	12.00	1.00	2.00	3.00	4.00	
			5.10	6.00	6.15	7.00	8.00	
			9.00	10.00	11.30			

Maple Plains	Saint Paul	A.M.	7.15	9.15				
		P.M.	12.15	2.45	4.45			
	Minneapolis	A.M.	8.00	10.00				
		P.M.	1.00	3.30	5.30			
Mankato	Saint Paul	A.M.	8.00	10.00	M.	12.00		
		P.M.	2.00	4.00	5.00	8.00		
	Minneapolis	A.M.	8.00	10.00	M.	12.00		
		P.M.	2.00	4.00	5.00	8.00		
Marshall	Saint Paul	A.M.	7.15					
		P.M.	3.15					
	Minneapolis	A.M.	8.00					
		P.M.	4.10					
		P.M.	2.00					
Taylors Falls	Saint Paul	A.M.	8.03	11.05				
		P.M.	2.30	3.35	6.05	8.15		
	Minneapolis	A.M.	7.30	10.30				
		P.M.	1.30	3.00	5.30	7.30		
Waconia	Saint Paul	A.M.	7.15					
		P.M.	3.15					
	Minneapolis	A.M.	8.00					
		P.M.	4.10					
Willmar	Saint Paul	A.M.	7.15	9.15				
		P.M.	12.15	2.45	4.45			
	Minneapolis	A.M.	8.00	10.00				
		P.M.	1.00	3.30	5.30			
Wadena	Saint Paul	P.M.	12.15					
	Minneapolis	A.M.	7.00					
		P.M.	1.00					

* Sundays only.
□Ex. Sunday.
+Ex. Saturday and Sunday.

The following table shows the leaving time of buses for the Twin Cities from all terminals on the Northland system.

From								
Alexandria	A.M.	6.50	10.35					
	P.M.	3.00	7.00					
Brainerd	A.M.	6.35	8.35	10.35				
	P.M.	12.35	2.35	4.35	7.35			
Benidji	A.M.	7.45						
Crosby	A.M.	9.40						
	P.M.	5.09	6.50					
Carver	A.M.	7.35						
	P.M.	*7.30						
Duluth								
	A.M.	7.30						
	P.M.	3.30						
Mora	A.M.	7.30						
	P.M.	1.00	5.00					
Onamia	A.M.	7.30						
	P.M.	□12.40	12.55	5.25	*6.20			
St. Cloud	A.M.	6.15	7.00	8.00	9.00	10.00	11.00	
	M.	12.00						
	P.M.	1.00	2.00	3.00	4.00	5.00	6.00	7.00
		*8.00	*9.00	10.00				
Sauk Centre	A.M.	6.05	8.00	10.05				
	P.M.	12.05	2.05	4.10	8.10			
Superior, Wis.	A.M.	10.45						
	P.M.	3.15						
Tracy	A.M.	7.00						
	P.M.	5.00						
Taylors Falls	A.M.	7.00	9.35					
	P.M.	2.35	3.10	6.00	7.40			
Waconia	P.M.	12.50	10.05					
Willmar	A.M.	8.15	10.15					
	P.M.	12.45	3.45	6.15				
Wadena	A.M.	7.30	11.25					

* Sunday only.
□Ex. Sunday.

ASK AGENTS ABOUT CHEAP ROUND TRIP FARES

Northland Transportation Co.

Saint Paul Depot CEDAR 2600 — Minneapolis Depot ATLANTIC 2020

This Poster, Printed in Colors, Shows Departing Times of Northland Buses at Principal Towns

containing time-tables and other information. In all, 25,000 of these were distributed throughout the territory served by the Northland. These were sent to superintendents of schools and to heads of all business firms in towns on the various bus routes.

At the present time, the company is distributing small

MOTOR BUS SCHEDULE

Effective September 1st, 1926 Subject to Change Without Notice

Twin Cities, Glencoe, Olivia, Redwood Falls and Marshall

WEST BOUND

	A. M.	P. M.
St. Paul	7 15	3 15
Minneapolis	8 00	4 00
Hopkins	8 30	4 30
Excelsior	8 50	5 00
Victoria	9 05	5 15
Waconia	9 20	5 30
Young America	9 41	5 51
Norwood	9 44	5 54
Glencoe Ar.	10 07	6 17
Glencoe Lv.	10 15	6 25
Sumter	10 27	6 37
Brownton	10 39	6 49
Stewart	10 53	7 03
Buffalo Lake	11 06	7 16
Hector	11 17	7 27
Bird Island	11 29	7 49
Olivia	11 40	7 59
Morton	12 21	8 21
Redwood Falls Ar.	12 30	8 45
Redwood Falls Lv.	12 45	8 55
Vesta	1 19	9 29
Milroy Corner	1 41	9 51
Marshall Ar.	2 00	10 10

Marshall, Redwood Falls, Olivia, Glencoe and Twin Cities

EAST BOUND

	A. M.	P. M.
Marshall	7 00	3 00
Milroy Corner	7 20	3 20
Vesta	7 42	3 42
Redwood Falls Ar.	8 16	4 16
Redwood Falls Lv.	8 25	4 25
Morton	8 39	4 39
Olivia	9 11	5 11
Bird Island	9 21	5 21
Hector	9 43	5 43
Buffalo Lake	9 54	5 54
Stewart	10 07	6 07
Brownton	10 21	6 21
Sumter	10 33	6 33
Glencoe Ar.	10 45	6 45
Glencoe Lv.	10 50	6 50
Norwood	11 13	7 13
Young America	11 16	7 21
Waconia	11 37	7 42
Victoria	11 52	7 57
Excelsior	12 07	8 12
Hopkins	12 27	8 32
Minneapolis Ar.	1 00	9 06
Saint Paul Ar.	1 35	

Round Trip Thirty Day Fares in Either Direction between Twin Cities and

Morton.....$7.00 Redwood Falls.....$7.00
Vesta.....$7.00 Milroy Corner.....$7.00 Marshall.....$7.00

Ask Our Agent for Information about Other Round Trip Rates

NORTHLAND TRANSPORTATION CO.

509 6th Avenue No. MINNEAPOLIS Phone Geneva 5681

A Typical Single Route Schedule Poster

time-cards covering the individual line on which a passenger is traveling, one of which is given to him when he purchases his ticket. This card, of course, shows the schedules of returning buses, with the intention of securing the patronage of the passenger on his return trip.

A number of different kinds of posters showing motor bus schedules have been published by the Northland. They are varied in appearance, and in contents. One of the largest of these, entitled, "New Motor Bus Schedules Between Twin Cities on Northland Territory" is reproduced with this article, as are two reproductions of smaller posters. The larger poster which is printed in colors shows the starting time of buses en route to the Twin Cities from the principal towns served by the Northland lines with return schedules from the Twin Cities also.

This poster, which is printed on a large white card, has the names of towns and departing times printed in blue and the other lettering in red.

The other two posters reproduced herewith are typical of the kinds prepared to advertise the bus service on individual lines. It is notable that a point is made of the 30-day round trip fares between the Twin Cities and the various towns served. Posters of this sort are displayed at stations and hotels, as well as in store windows and on telephone posts.

Special Folders Featured

The Northland issues a number of special folders describing its service and the towns which its buses touch. One of these entitled, "See Minnesota by a Northland Bus" is well illustrated and well written and advertises the region north of the Twin Cities in the vicinity of Duluth. Each page of this folder is devoted to an individual Northland bus route, describing the points of interest along it and stating the special round trip fare in effect.

Several months ago the Northland adopted a new idea in the preparation of its general time-table folders which

Bus Schedule

Duluth - Superior - Ashland - Washburn - Bayfield

EFFECTIVE MAY 29, 1926

TIME TABLE

ATTRACTIVE 30 DAY ROUND TRIP RATES BETWEEN DULUTH-SUPERIOR
—AND—

ASHLAND	$3.60
BAYFIELD	$4.50

BUS DEPOTS:
DULUTH, 307 WEST SUPERIOR STREET
SUPERIOR, 1304 TOWER AVENUE
ASHLAND, 634 WEST SECOND STREET
WASHBURN, ARCADE CAFE
BAYFIELD, HYDERS

NORTHLAND TRANSPORTATION CO.

Melrose 440 DULUTH Melrose 1057

Special Fare Rates Are Featured on the Posters

has been favorably received. These folders are similar in most respects to railroad time-tables but the unusual feature is the devotion of the back-cover page to photographs and brief descriptions of principal towns on Northland bus routes. Each successive folder thus advertises one such town in this way. The preparation of the material to appear on this page is left largely to the local civic organizations, although the photographs are taken by commercial photographers at the expense of the Northland Company. Mankato, Minn., was the subject of the advertising of this sort which appeared in the Northland schedule of September, 1926. Since that time several other towns have been similarly described.

Close-up View of Ferryboat Going Into Slip, Showing Location of B. & O. New York Coaches on Front End

Bus Maintenance Problems are the Same Everywhere

Breakdowns Can Be Eliminated*

Preventive maintenance instead of repair after failure is essential

By G. T. Seeley
Vice-President, Chicago Motor Coach Company

A PASSENGER in a steam railway train or on a well-conducted street or interurban electric system rarely sees a vehicle that gives any indication of not being in 100 per cent operating condition. Contrasted with this condition, a large number of buses in operation at the present time are in poor condition.

A high degree of maintenance, well painted and immaculately clean buses, will cost more per mile for maintenance and operation for a short period than will slip-

The Garages Are Well Equipped with Time-Saving Devices

shod operation, but in the long run, considering both maintenance and depreciation, the high degree of maintenance will be cheaper.

From the traffic standpoint, if the better bus will attract one more passenger every two trips than the poorer bus, the difference in earning power will more than pay for the higher standard of maintenance. The reasons for this seem elemental and obvious. Because they are overlooked in so many cases, and because the results of any bus undertaking may be determined by these factors some of the various reasons for adequate maintenance will be discussed.

Some of the methods used by the Chicago Motor Coach Company will be outlined, not because we consider our practice a model, nor do we claim to maintain a 100 per cent condition of our buses, but many of the practices that are used have been the result of many years of bus operation in England and America and every attempt is made to maintain each bus in a 100 per cent condition.

The Chicago Motor Coach Company owns 415 buses, 364 of which are of the double deck type, and 51 of the single deck type. After the reconstruction of a number of the older type of chassis mentioned above, all chassis, except 10 of the New York so-called "L" type, will be practically of one standard, having the same type of springs, engine, clutch, transmission, rear axle, and the like.

All operation is of the city service type, involving many stops per mile in dense traffic.

Central Repair Shop

A central repair shop is maintained, to which point each bus is brought once a year for painting. Very little work is done on the chassis at the time the bus is in the main repair shop, as the units are replaced in the operating garages whenever they have attained their average life, which is determined from experience. As

*From a paper presented at the meeting of the Society of Automotive Engineers at Boston, Mass., on Nov. 16.

the life of the various units does not coincide with the period of repainting, it would be uneconomical to replace all the units on a fixed time basis such as once a year. In the central repair shop all repairs are made to the various units, such as engines, transmissions, clutches, and replacing brake linings.

Fifteen buses on the average are at all times in the central repair shop. The remaining 400 buses are distributed among four operating garages, located at the most convenient point for storage in each division of the city.

In each operating garage is kept a full supply of small repair parts and spare units, such as engines, transmissions, clutches and rear axle springs. The only tools in each operating garage consist of a wheel press, a small hand drill, an emery wheel, an arbor press, a small portable crane for removing the engine, and hand tools.

Buses Are Washed Daily

During the interval between the annual repaintings all the work necessary to keep the buses in 100 per cent operating condition is performed at the operating garages except major body repairs due to accidents. A brief outline of the work performed in the garages is as follows:

Outline of Work

In each bus is kept a "daily coach report" on which the driver notes any defect that is noticeable during the time he is driving the bus. These cards are turned in by the driver when the bus pulls into the garage, and the necessary repair is made by the day or night mechanical force. A notation of such repair work is made on the individual "general inspection sheet" for that particular bus. The notation includes date, nature of work done, and name of the person by whom the repair was made.

Every 2800 miles, each bus is given a general inspection, and the "general inspection sheet" is placed in the bus. The mechanic making the inspection has a complete list of every failure of defect that has occurred since the last general inspection, and what was done to remedy the trouble.

The "general inspection sheet" has a list of 106 separate items that must be given attention. As each item is covered by the inspector, it is checked off, and a space is provided for the signature of the man making the inspection. The principal items on this inspection list are as follows:

Radiator—Radiator is examined for leaks, also hose connection. Any hose is replaced that is not good for 2,500 miles.

Engine—Engine is tested for compression and run to examine for knocks. Also examined for oil leaks. Crank case is drained and refilled with fresh oil. Exhaust ports are cleaned. Fan and fan felt are inspected and greased.

Ignition—Magneto is thoroughly cleaned. Breaker points are adjusted. Magneto is oiled. Lead wires are examined. Spark plugs are examined and adjusted. Installing switch is examined.

Carburetor—Jets are removed from carburetor and cleaned. Float and float weights are examined. Pull-back spring on throttle rod is examined for wear. Accelerator and cross shaft are oiled. Gas tank and gas line are examined for leaks. Sediment bowl is drained.

Clutch—Clutch linings are examined through inspection holes. See that clutch is properly adjusted.

Transmission—Examined for noise and for oily leaks. Suspension bolts examined. See that all gears mesh properly.

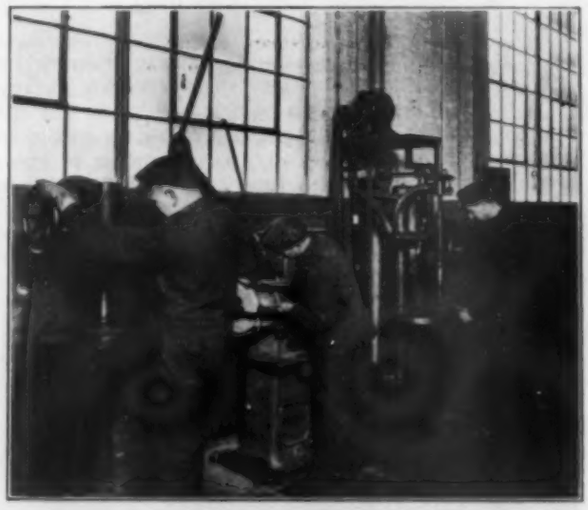
Rear propeller shaft—See that all bolts are tight and there is no undue play. See that joints are properly lubricated.

Rear axle and brakes—Jack up both sides and see that wheels turn freely. Test for end play on wheel bearings. Remove wheels and inspect brake lining. Examine tires for flat spots and see that wheels are tight on taper. See that brake drum bolts are tight. Examine carrier bolts for leaks and see that they are tight. Examine oil level. Examine worm and wheel for wear. See that flange is tight on worm shaft. Tighten rear axle spring bolts. Examine rear spring for broken leaves.

Front axle, steering and front springs—See that front spring clips are tight. Jack up front wheels and test bearings for wear. Grease front wheel bearings. Examine tires. See that wheels are in line. Examine tie rod arms and see that they are tight in taper. Examine front springs for broken leaves. Examine tie rod connections. Grease tie rod connections. Examine drag links. Grease drag link connections. Examine steering drop lever. Examine pivot pins. Grease pivot pins. Grease steering gear. See that steering gear bracket is tight on frame. See that all important nuts are pinned. See that steering gear column tube is tight. See that there is no unnecessary play.

Electrical—Every fourth inspection, remove the generator. Lubricate generator bearings and check generator output. See that all wearing parts are in good condition and connections tight. Examine battery. Examine all lights and clean lamps. Examine all bells and buzzers. Examine driver's and conductor's bell. See that all connections are tight in junction box.

Body—Wash interior of coach, including seats, every inspection period. Examine for loose seats and rattling windows. Examine entire coach for any projections that are liable to tear passengers' clothes. See that heating pipe covers are tight and that there are no loose screws. Examine stairway hand rails. Paint wheels every inspection period, and engine bonnet and fenders every 5,000 miles. Examine fire extinguisher.



Operating Garages Have Few Tools

If the general inspection develops that any unit is not liable to operate satisfactorily until the next general inspection, a spare unit is taken from the storeroom and placed in the bus. The defective unit is sent to the central repair shop for repair, and after being put in perfect condition is returned to the storeroom.

Sixteen buses are required each day for general inspection, and eight of these are held in the morning so that men may start work at 7:30 a.m. The other eight are brought in after the morning rush is over. The

traffic peak in the morning is less pronounced than in the evening, so that eight buses may be made available for work without affecting service.

All inspection work must be completed by 4:30 p.m. in the afternoon so that all buses are available for evening rush hour service. If any defect should develop in any of the coaches in operation during the day and if the bus is brought into the operating garage by 2 o'clock, the proper repair can be made and the bus be sent out for service in the afternoon rush.

Night Inspections

Between the general inspections, buses are inspected at night for the following purposes: Once a week the differential and transmissions are examined for grease. Steering gear is examined. Batteries are filled every seven days. Brake adjustment is checked.

One of the important features of design which enables repair work to be made readily is the fact that the chassis is so designed that each unit is independent of the other units, and can be replaced in a minimum of time. For example, the average time required to make replacements is as follows:

Front springs	(1 man)	½ hr.
Rear spring	(1 man)	1 hr.
Rear axle shaft	(1 man)	1½ hr.
Transmission	(2 men)	45 min.
Clutch	(1 man)	½ hr.
Engine	(2 men)	2½ hr.
Radiator	(2 men)	½ hr.
Generator	(1 man)	15 min.
Battery	(1 man)	15 min.
Remove and replace differential	(2 men)	2½ hr.

A card index is maintained at the central repair shop for each unit. A serial number is stamped on each engine, clutch, transmission, rear axle, etc. (On the card for each unit is shown the date of installation in the bus, the bus number, the date removed, and the nature of the work done.) In this way the performance of each individual unit and of all the units as a whole may be studied.

99.5 Per Cent of Buses in Rush Hour Service

The result of the above system from an operating standpoint is that, on an average, 99½ per cent of the 400 buses in the operating garages are available for service every evening rush hour. In other words, in all of the operating garages there is on an average not more than two buses not ready for service in the evening rush hour, and on many evenings there is not a single bus that is not actually in operation on the entire system, with the exception of the buses in the central repair shop.

The whole system of inspection and maintenance is based on the principle of preventive maintenance instead of repair after failure. The period of 2800 miles between inspections has been fixed by experience as being perfectly safe, and it is our belief that this might safely be increased to 3,000 or 3,200 miles, provided lubrication is taken care of between inspection periods.

Results of Proper Maintenance

Lower maintenance costs over a period of years will be brought about by proper preventive maintenance. If a certain unit is neglected and allowed to fail in service, the resulting total cost of repairing the damage may be many times the cost of replacing the necessary part during inspection.

Great reliability in service will follow preventive maintenance. There is no reason why motor bus operation should not be fully as reliable as electric railway or steam railway service, provided that vehicles are properly designed and properly inspected and maintained. The buses will present a better appearance if at each inspection the scratches in the body are touched up with paint, the wheels painted, and the bottom and fenders painted at regular intervals. Accidents due to defective equipment will be practically an unknown quantity with proper preventive maintenance.

As outlined above, the greater percentage of buses may be kept in service, reducing to a minimum the number of spare or reserve buses required, if major failures are prevented. Obsolescence may be retarded by proper maintenance. As the buses are brought into the repair shop for yearly painting, fixtures and accessories may in many cases be replaced by a better design or more reliable type at a small expense. Minor body changes may be made. Seats may be replaced, or seating arrangements changed, making the bus more up-to-date and prolonging its life many years. This can be done

All Running Repairs to Equipment Are Made in Operating Garages

in most cases without an excessive cost, and if the life of the vehicle is increased from 150,000 or 200,000 miles to 300,000, the resulting decrease in depreciation charges will offset many times the cost of the changes made, besides reducing in many cases further maintenance costs.

If bus operation is to be on a sound economic basis, the life of the vehicle must extend over a period of from eight to ten years, or even longer. Preventive maintenance plus thorough annual overhauling and the bringing of every feature possible up-to-date, will insure maximum life to a properly designed vehicle.

* * * *

A Rail-Motor Car in Russia

A. C. F. Builds 198-Inch Bus Chassis

DELIVERY of the first complete coaches of the new 198-in. wheelbase chassis has been announced by the American Car & Foundry Motors Company. The body models consist of a 16- 20-passenger parlor car type, and a 23-passenger street car type. The appearance and design follow very closely that of the larger coaches of this manufacturer, not only in the general appearance of the complete job, but also in the mechanical details. A new six-cylinder Hall-Scott engine has been developed for use in this model. It is virtually a counterpart of the earlier Hall-Scott six, but has a bore of 3¾ in. and a stroke of 5 in., as compared with the 4¼-in. bore and 5½-in. stroke of the large power plant. It develops 60 h.p. at 1,800 r.p.m., which is its governed speed.

One of the outstanding characteristics of this engine is its relatively high power output at low speeds, which is considered a very important factor in fuel economy, rapid acceleration and long life of wearing parts. Interchangeable unit construction has again been used, to facilitate maintenance operations and reduce the cost of renewing wearing parts.

Semi-steel has been used in place of the customary cast iron for the cylinder block and head castings. The complete cam, valve, and governor mechanism is contained in the cylinder head unit, which can be detached and replaced with an interchangeable head in thirty-minutes. The combination of overhead valves, smoothly machined combustion chambers, and thick walled aluminum alloy pistons are said to limit carbon formation and prolong the period between successive valve grindings to an average of about 25,000 miles.

Lubrication is by force feed to all crank shaft bearings, to the accessory-drive-chain sprockets and to the cam shaft and rocker arm bearings. The oil is cleaned of mechanical impurities by means of a Hall-Winslow filter before entering the circulating system. Most of the oil passes up to the rocker arms, and escapes into a trough on the cylinder head in which the cam shaft runs. The heat from the head distills off all of the water and practically all of the fuel dilution in the oil, and a system of circulating fresh air carries these vapors out through a breather cap on the rear of the valve cover.

The frame is of the tapering fish-belly type, with maximum depth of 9 in. The flange is 3 in. wide for the entire length, and is pressed from 3/16-in. stock and heat treated. The side rails are continuous. Three tubular and one pressed steel cross members are used. They are so placed that they come opposite the outriggers which carry the body, and prevent the body stresses from twisting the frame rails. Tubular members take up the spring torque, and prevent road shocks from being projected through the frame.

Springs are unusually long and wide, the front being 46 in. by 3½ in., and the rear 60 in. by 4 in. They are nearly flat under load, and are shackled so that their speed of rebound is retarded. Rubber stops have been provided so that the springs are never deflected beyond 75 per cent of their elastic limit.

Special Timken axles with 65½ in. tread are equipped with Budd pressed steel wheels and 34 by 7.50 Balloon tires. The rear axle is the underslung worm type. Drive axles are provided with external and internal gear type splines in the drive plates, so worn wheel-bearings or faulty adjustment cannot deflect the drive shaft.

Four-wheel brakes of the three shoe Bendix type with copper asbestos liners are provided as a measure of operating safety. The service brake operates on all four wheels, the hand brake interconnecting on the rear shoes. The leverage is so arranged that the outer front wheel brake releases while turning a corner, to guard against impeded steering.

The bodies are designed to take full advantage of the low frame height. The type of mounting used makes it possible to build the body sills down along the ends of the outriggers so the floor practically lies on the frame.

Both the parlor car and street car bodies are built of interchangeable, demountable units. In case any unit is badly damaged in an accident it can very easily be taken out and replaced. The seats used in the new models are the same as those with which the larger models are equipped, with deep springs and pads, and genuine leather upholstery. Interior finish is in keeping with the most advanced practice of the industry, with hand-rubbed mahogany trim, nickel plated hardware, frosted glass dome lights, exhaust heaters, ventilators, etc.

The New a. c. f. Bus

Mack City Type Bus Operated by Yakima Valley Transportation Co., a Union Pacific Subsidiary

Are Joint Rail-Bus Fares Legal?

Union Pacific cites its proposed bus lines to show difficulty of co-ordinating service

NEARLY a year ago the Union Pacific and seven other western lines petitioned the Interstate Commerce Commission for authority to publish joint through passenger fares covering transportation partly by rail and partly by motor bus, stating that they planned the operation of buses supplementary to their train service. The petition called attention to certain alleged obstructions to such publication of joint rail and bus rates and asked their removal, claiming that their continued existence precludes the legal operation of buses by railways as a supplementary and co-ordinated means of transportation. Action on the petition was held in abeyance pending completion of the commission's motor transport investigation and the case is still pending.

In response to a request of the commission, the Union Pacific submitted a supplementary memorandum showing concrete examples representative of each class of service it wishes to establish and presenting further argument concerning the legal questions involved. An abstract of the supplementary submission follows:

Bus Routes Contemplated

Illustrations of auto-bus operations contemplated by petitioners will be confined to instances of proposed operations by the Union Pacific System for the reason that these are fairly illustrative of all of those to which the application is intended to relate, and also because the information with respect to them is readily at hand, while to secure similar information from the other applicant lines would occasion undesirable and unnecessary delay. Among the operations of this character now in contemplation by different units of the Union Pacific System are the following:

Between Columbus, Neb., and Norfolk, paralleling the branch line of the Union Pacific between those points.

Between Salina, Kans., and McPherson, also paralleling a branch of the Union Pacific.

Between Denver, Colo., and Fort Collins, via Greeley, paralleling one of the main lines of the Union Pacific between Denver and Greeley, and branch lines the rest of the way.

Between LaSalle, Colo., and Boulder, paralleling branch lines of the Union Pacific.

Between Los Angeles, Cal., and Glendale, paralleling a branch line of the Los Angeles & Salt Lake.

Between Anaheim, Cal., and either Pico or Los Angeles. The operation between the first two points would parallel a branch line of the Los Angeles & Salt Lake while between the two latter points it would be along the main line into Los Angeles from the east.

It is the desire of petitioners that any fare applicable to an all-rail trip, to, from, or through a point which will be served by their bus operations shall be applicable when any part of the trip is made by means of one of their buses.

Any one of the foregoing instances might be used to illustrate the tariff difficulties which are involved under the present regulations of the commission where the auto-bus is used as the first or last link in a through passenger movement. The proposed operation between Denver and Ft. Collins, however, presents the problem from practically every angle and illustrations of the

various tariff difficulties with which the petitioners are confronted will be confined to specific examples taken from that one proposed operation.

Tariff Difficulties Encountered

For illustrations of the different situations presented where the bus service constitutes the last lap of the through journey, we may assume a passenger from St. Louis who travels by rail as far as Denver and then by auto bus to any of the points reached by the proposed bus operation out of that point.

(a) If his destination be Ft. Collins, then we have the following situation:

Present fare, St. Louis to Denver	$32.80
Present fare, St. Louis to Ft. Collins	33.46
Present fare (probable local bus fare), Denver to Ft. Collins	2.46
Combination exceeds through fare by	1.80

(b) If his destination be Greeley, then the situation is as follows:

Present fare, St. Louis to Denver	$32.80
Present fare, St. Louis to Greeley	33.46
Present fare (probable local bus fare), Denver to Greeley	1.92
Combination exceeds through fare by	1.26

(c) If his destination be LaSalle, then the following situation is presented:

Present fare, St. Louis to Denver	$32.80
Present fare, St. Louis to La Salle	33.46
Present fare (probable local bus fare), Denver to La Salle	1.68
Combination exceeds through fare by	1.02

(d) If his destination is Lupton, then we have the following situation:

Present fare, St. Louis to Denver	$32.80
Present fare, St. Louis to Lupton	33.46
Present fare (probable local bus fare), Denver to Lupton	.96
Combination exceeds through fare by	.30

(e) If the passenger is going to Brighton, still a different situation is presented as follows:

Present fare, St. Louis to Denver	$32.80
Present fare, St. Louis to Brighton	33.46
Present fare (probable local bus fare), Denver to Brighton	.72
Combination exceeds through fare by	.06

The foregoing illustrations show the impossibility of taking care of the different situations by the publication of through fares in accordance with the requirements of rule 34 (h) of tariff circular No. 18-A. Under that rule, in addition to showing the through fare to each of these destinations applicable in connection with the bus operation, petitioners would be required to show that portion of the through fare applying for their rail service up to Denver. The rule also provides, however, that the amount so shown as accruing to them would automatically become the local fare from St. Louis to Denver. It will be noted from the foregoing illustrations that not only would this rule operate to reduce the present rail fare from St. Louis to Denver but that the reduction would be in a different amount in the case of each destination shown. Of course there can be only one local rate in effect between two points, and consequently the maximum reduction necessary to take care of the situation which obtains with respect to Ft. Collins would govern. This in turn would operate to reduce the combination to all of the other destinations in varying amounts and thus bring about what would otherwise be wholly unnecessary reductions in their through fares. As it is by no means an unusual situation in the west, the Denver fare applies at Pueblo, Colorado Springs and other less important points. Those points would have no connection with the bus situation under consideration, yet their fares would come down along with the Denver fares. The full import of what has been shown is better appreciated when it is considered that only the Union Pacific would be concerned with this particular bus situation while the concurrence of other lines would be necessary to any changes in the rail fares from St. Louis and other points beyond its rails.

The fares which we have shown above generally apply in either direction so that by merely reversing the illustrations given we have similar ones covering cases where the bus service constitutes the first link in the through journey. For illustration of cases where the bus service is used as an intermediate link, we might consider a one way movement from St. Louis to Cheyenne, Wyo., via rail to Denver, auto-bus to Greeley, thence again by rail. For consideration in this connection we show the following fares:

Present fare, St. Louis to Denver	$32.80
Present fare, St. Louis to Cheyenne	33.46
Present fare (probable local bus fare), Denver to Greeley	1.92
Present fare, Greeley to Cheyenne	1.98
Combination exceeds through fare by	3.24

Obviously the present tariff rules of the commission are not adapted to meeting a situation of this character in any respect.

Complication in Round Trip Fares

An even more complicated situation is presented in the case of round trip fares. Each summer the carriers publish special round trip summer excursion fares to various resorts. Effective May 15, 1926, they expect to publish a summer excursion fare of $37.80 from St. Louis to various Colorado points and return, including Denver, Ft. Collins, Boulder and Greeley. All of these points will be accorded a common fare as the result of the commission's order in the Boulder case, 107 I. C. C. 49. These summer excursion fares accord the passenger the option of returning by a different route from that used on the going journey. A passenger purchasing a ticket from St. Louis to Ft. Collins and return might go via the Union Pacific from Kansas City to Denver and return via that line through Cheyenne and Omaha. The proposed bus operations of the Union Pacific could thus be used in various ways by a passenger holding a round trip excursion ticket of this character. If he intended both to go and return via Denver, he might use the bus service in both directions or in either direction between Denver and Ft. Collins. If he intended to return via Cheyenne, he might use the bus from Denver to Ft. Collins and return all rail, or he might also ride in the bus on his return journey from Ft. Collins to LaSalle or Greeley and then take the train. We have already shown the local fare between Denver and Ft. Collins. Between Ft. Collins and LaSalle it is $1.20 and between the latter and Greeley it is 24 cents. It requires no comment to show that it would be utterly impossible for the petitioners to make these round trip excursion fares applicable in connection with the proposed bus service and at the same time meet the present requirements of tariff regulations.

It is not deemed necessary to devote any time here to an effort to demonstrate the desirability, and even necessity from a practical standpoint, of having the published tariffs of the rail lines show through fares covering the combined service by rail and bus wherever the latter is expected to be availed of by through passengers. That is sufficiently obvious when it is considered that passengers from other parts of the country purchasing tickets good for passage over one of the petitioning lines cannot be expected to have information as to what, if any, bus operations it may conduct between points which it also serves by rail, except perhaps in those instances where the operations are designed to add to the scenic attractions of a particular route and widely advertised from that standpoint. Ordinarily it will not be until a passenger reaches the actual territory of their operation that he will learn anything as to the existence of optional routes by auto-bus, or of the advantages thereof from the standpoint of convenience of schedules or otherwise. Unless his ticket already entitles him to the benefits of this alternative service he will generally learn of it too late to avail himself of it without sacrifice.

Jurisdiction of Commission

In its report in Tariffs Embracing Motor Truck or Wagon Transfer Service, 91 I. C. C., 539, sometimes referred to as the Starin-New Haven case, the commission had occasion to give consideration to the question of its jurisdiction over certain kinds of services performed by motor-truck or wagon transfer companies. After a careful consideration of those provisions of section 1, which define both the classes of persons and the different kinds of services to which the Interstate Commerce Act applies, it reached the conclusion that the Act has no application to, and consequently the commission has no jurisdiction over, motor truck or wagon transfer companies or the services performed by means of truck or wagon when operated as an extension of the lines of rail or water carriers subject to the Act. This is a far different thing, of course, from saying that the Act has no application to, and consequently the commission has no jurisdiction over, the transportation of passengers or freight by motor truck or auto bus when performed by a railroad subject to the Act between points already served by its rail lines, constituting a part of a through interstate service, and furnished as a substitute for service heretofore performed by rail and which can still be and is also still so performed. That the conclusion there reached is not determinative of the question now presented for its consideration was recognized by the commission when at the conclusion of its report it specifically reserved expression of opinion as to its jurisdiction over service similar to that now under consideration, saying:

"There is still another class of motor-truck service which has developed since the hearing and which was not referred to in the record. Certain carriers are handling short-haul package freight between points on their lines via motor trucks instead of via local-freight trains. The arrangement, it is said, is a step toward relieving railroad facilities so as to expedite the handling of long-distance heavy freight for which railroad equipment and facilities are better adapted than motor vehicles. No change is proposed in the rates and it is simply an alternative method of handling traffic between points already served by the carrier. As this situation was not before us on this record we express no opinion at this time as to our jurisdiction over such service and the manner in which the rates therefor are published."

Assuming for the purposes of this discussion, that the commission will find that the Act does not apply to bus operations of the character contemplated by the petitioning carriers and that it consequently has no jurisdiction whatever over the fares applicable thereto, we think nevertheless that it is not powerless to aid the petitioners in the manner sought by them herein. It is obvious from the illustrations already given that any relief in order to be at all effective must be in the way of permitting the filing of tariffs which shall in some manner state lump-sum fares applicable to the combination through service.

Through fares of the character now under consideration may be justified as lawful from any one of several viewpoints, the precise manner of their publication in the tariffs depending upon the particular viewpoint which the commission sees fit to adopt respecting them. There is no doubt in our mind that the commission would be amply justified in adopting any one of the following views of the proposed fares and in authorizing their publication in a manner conforming to the view thus adopted:

Through Fares Justified Legally

(a) They may be dealt with as joint through fares of all carriers participating therein, including the carriers by bus. This means that the rail line which conducts the bus operations is to be regarded as having two distinct entities, namely, that of a common carrier by bus and that of a common carrier by railroad, and as joining in its former capacity with itself in the latter, and in some instances with other rail carriers, in the establishment of joint through fares. This suggestion raises the question whether the commission can lawfully permit a carrier subject to the Act to publish joint rates or fares in connection with a common carrier not subject thereto.

It is submitted that whether the commission shall permit or refuse to permit the publication of joint through fares between rail carriers subject to the Act and one or more of the same carriers acting as common carriers by auto-bus is a matter which under the Act lies wholly within its own sound discretion. It is also submitted that in the instance now presented there is no sound reason for withholding its permission.

(b) Another view of the situation which we think the commission may properly take as a basis upon which to authorize the publication of through fares as sought by petitioner is that of regarding the auto-bus as an agency used by the rail line in connection with which is is operated in the performance of services covered by the through fares as already published, letting that carrier take care of the tariff question involved by means of an absorption provision inserted in an appropriate tariff circular which will show the amounts accruing for the bus service and provide for its absorption thereof out of the through fares, or its proportion of the through fares, as the case may be. In this view of the matter the through fares are wholly those of the rail carriers, parties thereto, but include services performed for them by other carriers not parties, hence the necessity for the absorption.

(3) The through fares may be regarded as wholly those of the rail carriers, parties thereto, representing the prices at which they offer to carry passengers between the points in question in discharge of their duties under the law as common carriers by railroad between the points for which the fares are named, and the service by bus regarded as being merely one which the carrier on whose line it is performed substitutes, at the option of the passenger, for that which it has undertaken to perform by rail. Thus viewed, the bus operations at most represent privileges or facilities furnished in connection with the published through fares which affect the value of the service rendered the passenger thereunder and present a question of tariff publication only to that extent.

The petitioning lines now serve as common carriers by railroad all the points which will be served by their proposed bus operations. They already have tariffs on file with the commission naming individual and joint interstate fares to, from and through those points. They are under obligation to transport passengers to, from and through those points at the lawfully applicable fares. Unquestionably the provisions of the Act and the jurisdiction of the commission attach to any contract evidenced by a through ticket issued in return for the fare shown in their lawfully published tariffs by which they undertake to transport the holder between two points on their lines. When, now, one of the carriers party to that contract, for a part of the service which it is obligated thereunder to perform, substitutes an equivalent service of another kind, this certainly will not relieve it of the necessity of applying to the entire service the through charges as named in the lawfully published tariff. It is difficult to see how that part of the through service is removed from the operation of the Act and placed beyond the jurisdiction of the commission by sole reason of the fact that in performing it the rail carrier employs an agency which does not fall strictly within the statutory definition of a railroad.

Bus Accidents—Their Causes and Prevention*

By H. V. Drown
General Claim Agent, Public Service Company of New Jersey

WHEN confronted with the problem of handling bus accidents, naturally the questions arising in one's mind are: What will they amount to? How much work will be involved? What will the cost be? Will they be more or less frequent and formidable than the trolley car accidents? My own first thought was that they would be less troublesome and expensive, my off-hand reasoning being that such a flexible vehicle, one so much more easily controlled and not confined to rails, would have a distinct advantage.

My actual experience in this field has considerably altered my original notions. While the bus has advantages over the trolley car I have referred to, there are disadvantages to be reckoned with. To begin with, it is a smaller vehicle carrying considerably fewer passengers. The effect of this is obvious in calculations bearing on the relation of claim expenditure to revenue. To illustrate: For one year's operation there were 442.46 accidents per million bus miles against 444.99 accidents per million car miles on our railway, which in comparison, you will note, is very consistent, but there were 82.86 accidents per million passengers for the buses as against 51.91 for the railway, a considerable variation, due principally to the smaller carrying capacity of the bus. The bus is a much more fragile vehicle than the trolley, and in severe smashes it is more susceptible to being crumpled up, with consequent injuries effect to passengers. I have pointed to the advantage the bus has in not being held to a fixed course as the trolley car is on its rails, but this is at least partially offset by the fact that in the very turning from its course the bus may sideswipe other vehicles or otherwise get into collisions with vehicles and pedestrians that would not materialize if the bus were held to a fixed course. Then the bus, with its rubber tires, may skid on slippery pavements and as likely as not come into collision with other vehicles or pedestrians or a fixed object with more or less serious consequences.

Our expenditures on account of bus accidents for the first year, including everything chargeable to the accident and damage account, amounted to 3.17 per cent of the revenue. For the same period the claims costs for the Public Service Railway Company amounted to 5.37 per cent of its revenue. On this showing alone, I would assume that in about four years, when I should expect the bus percentage to hit its peak, it would at least equal and more than likely exceed that of the railway, but I confidently expect that it may be kept lower through the beneficial effect on the accident situation of standardization and improvement of equipment and of operation, toward which great strides have already been made, I also look forward to marked improvement in traffic regulations which will help materially.

Our expenditures for the year amounted to $253,263.76, divided as follows:

Personal injury claims	$93,404.14
Property claims	78,458.24
Workmen's compensation	21,885.12
Expenses	59,516.26
Total	$253,263.76

There is not a great deal of difference between the character of accident hazards arising out of the operation of the two vehicles—bus and trolley car. Our railway claims men took up the work with practically no difficulty. However, I think there is sufficient difference in the operation to justify separate printed forms and records throughout. We did this of necessity on account of the bus company being a separate corporation, but even where the business is merged with the railway, I should deem it an advantage to keep separate records. There is sufficient difference in the physical layouts to warrant it and the records afford opportunity for profitable study.

There are three general causes of bus accidents, and trolley car accidents, too, for that matter. In the order of their frequency they are, first, negligence on the part of the public; second, negligence on the part of employees; and third, defects in construction and equipment. Probably the greatest opportunity at present for bringing about a reduction in bus accidents lies in the direction of better traffic regulations. While credit is due in the instances where really practical and effective regulation has been worked out and enforced, it is patent that, on the whole, traffic regulation is woefully lacking. Witness arteries of traffic on main streets in many of our cities being blocked all day by one, two and even three lines of parked cars. Could anything be more absurd?

There are plenty of justifiable arrests for speeding, particularly out on the open highways where motorists are tempted to "step on it," but mighty few on account of the vastly more dangerous practices of exceeding the speed limitations at highway and street intersections, beating the line in heavy traffic and others equally dangerous. The minimizing negligence of employees much can be done all along the line. First, in the selection, through determining the fitness of the recruit, both mentally and physically, and then in giving him proper and sufficient training. Time and money spent on this account is a mighty good investment.

Defects in the construction and equipment of buses are if anything, more harmful in relation to accidents than in the case with trolley cars. It is, therefore, highly important that the bus be constructed with due regard to safety, and then maintained in as near a state of perfection as it is practicable to keep it.

To begin with, standardization is most desirable so that the operator in shifting from one bus to another, will find conditions with which he is familiar, so that when an emergency arises he will not have to stop to think for that moment, so often fatal. Uniform width and length of buses counts for much in obviating costly mistakes in judging clearances. This matter of clearance comes into play very frequently, not only in straight-away running when other objects are being passed, but also when the bus must deviate from its course, particularly in turning to or from the curb, where a miscalculation may result in sideswiping other vehicles. Steering apparatus merits attention. Here the trolley car has a great advantage, as, confined to its tracks, it is practically a self-steerer. When a bus operator, suddenly and without warning, finds his steering wheel useless, as likely as not, in a flash, his bus will be into a pole or other fixed object or over an embankment, resulting in serious injuries to passengers.

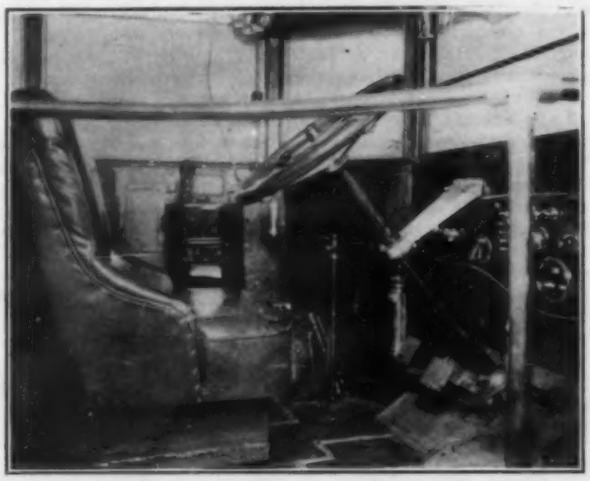
The brakes should be of the best type and serviced up to the minute. With traffic already highly congested and increasing steadily in density, and with four wheel brakes appearing in increasing numbers, even on the cheaper and lighter autos, by means of which they may be stopped in their tracks, so to speak, good braking equipment is increasingly essential.

* From a paper read before the American Electric Railway Claims Association at Cleveland, Ohio, on October 4.

Mack Gas-Electric Bus With One Driving Motor

A GAS-ELECTRIC bus has been added to the line of suburban and city service buses manufactured by the International Motor Company, 25 Broadway, New York. Production is confined to 25 and 29-passenger city type buses of 196 and 225-in. wheelbase chassis respectively.

One electric motor is used, making possible the retention of the standard Mack rear axle and single-propeller shaft, and eliminating considerable weight which would be required were two motors used. The changes in the standard Mack bus consist of the removal of the clutch, the transmission and the emergency brake lever. The operation of the emergency brake has been transferred to a foot pedal.



The Operator's Compartment of a Mack Coach, Showing the Location of the Drum Type of Controller

The electrical equipment, furnished by the General Electric Company, consists of a generator direct-connected to the engine, a motor coupled to the drive shaft, and a controller or switch to make the required circuits. The generator is rated at 125 volts and 200 amperes at 1,200 r.p.m. Both ends of the generator are of aluminum alloy. One end is bolted to the engine flywheel housing and forms the front support of the generator. The rear end of the generator is supported by a drop forged cross bracket, fitting over a circular projection on the end of the generator. This is a slip-fit so that, while the generator is held securely, allowance is made for chassis distortion or uneven road surfaces. The armature is mounted on a hollow shaft running on ball bearings. It is driven by a smaller solid shaft carried within and connected at the rear end of the hollow shaft through a rubber block flexible coupling. The front end of the solid shaft connects to the engine flywheel through a splined coupling, so that removal of the supporting bolts allows the generator to be pulled away from the engine. Multiple ventilation is secured by a fan on the engine end of the armature, which draws air through the armature core, as well as around and by the fields, and discharges through radial openings.

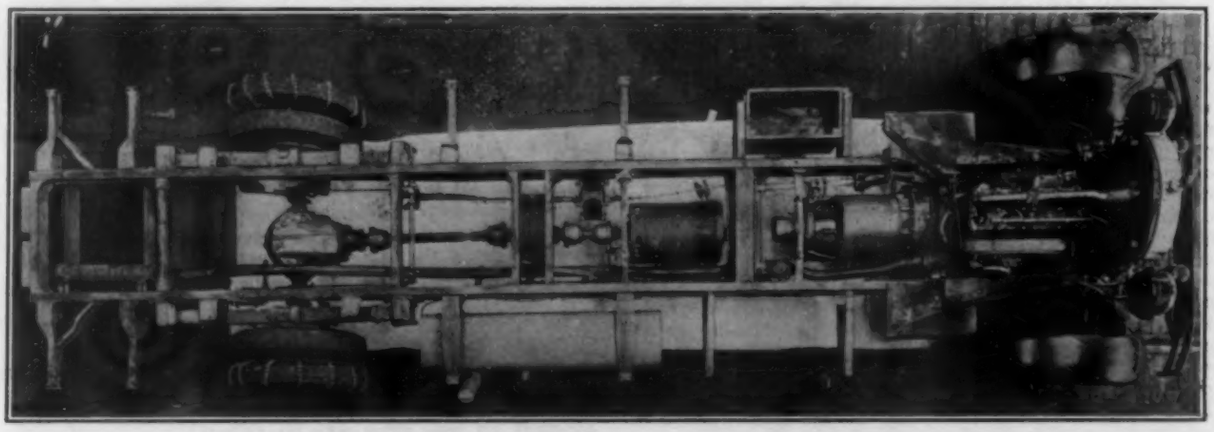
The single motor is rated at 125 volts and 140 amperes at 1,100 r.p.m. The gear reduction is 10.79 to 1.

The controller is a drum-type switch which is used only to give the proper connections for forward or reverse or for emergency electric braking. The ordinary operation of the bus is entirely by the foot accelerator pedal, and the bus speed is controlled by the engine speed. To make a stop, the foot is removed from the accelerator, which allows the engine to run at idling speeds, under which conditions not enough power is generated to move the bus.

With the bus speed normally approximately proportional to the engine speed it follows that a low bus speed, as at starting, the engine speed is relatively low. For rapid acceleration high horsepower outputs are required. These can be obtained only at high engine speeds, hence some means must be used to allow the engine to run fast at the start. This is accomplished by putting a resistance into the shunt field circuit which reduces the excitation and the torque requirements and allows the engine to run at higher speed. The increase in generator speed more than offsets the decreased field strength so that higher horsepowers are transmitted. A current-operated relay automatically cuts this resistance in or cuts it out as circumstances require.

Emergency electric braking is provided for by a position on the controller. This is a reverse position, with a limited grid resistance in series which will hold the bus to about 10 m.p.h. Further braking effort can be had by speeding up the engine so that a dead stop can be made electrically. A forward braking position is also provided, so that even with the engine stopped and other brakes failing, the bus will not roll backward down grade at a dangerous speed.

The added weight of the gas-electric units over the



The Chassis and Power Plant of the Mack Passenger Coach

standard parts which they replace is about 1,400 lbs., bringing the weight of the 25-passenger bus empty to 11,300 lbs., and the 29-passenger bus empty to 12,130 lbs.

As the generator occupies the place of the transmission in the gear-drive bus, the hand-brake lever is dispensed with and the right pedal, formerly the service brake, is connected to the emergency brake on the propeller shaft. This propeller-shaft brake in the Mack bus operates independently of the service brake which acts on rear-wheel drums.

Braking force in the emergency brake is applied directly to the driving shaft. The brake has a drum 11 in. in diameter and 6 in. wide. One square foot of actual braking area is provided. The emergency pedal is equipped with a ratchet arrangement, so that the brake may be left in the "on" position. The left pedal, formerly the clutch pedal, is used to operate the service brake, equipped with the vacuum booster brake.

The engine is a four-cylinder unit with a demountable head cast in pairs. The cylinders have 4¼-in. bore and 5-in. stroke. The horsepower, N. A. C. C. rating, is 28.9.

The engine is mounted on rubber shock insulators in practically the same manner as the springs. The generator is supported by a cross-member attached to the frame by means of steel-encased rubber blocks. The single electric motor is supported at three points by shock insulators.

Communications

The Efficacy of Sprinkler Systems

New York.

To the Editor:

Our attention has been called to the following statement in the abstract of the report presented by the Special Committee on Way and Structures of the American Electric Railway Association at the Cleveland convention on October 4, emphasizing salient points in the design of bus garages, as published in the Motor Transport Section of the *Railway Age* of November 27, 1926:

"Sprinkler systems are not designed for large areas and have in certain instances actually failed to work at a point of immediate need. Ten sprinkler heads delivering 20 or more gallons per minute should handle an ordinary fire. When more than 10 heads have been called into play, it has been a serious fire, in practically every instance with a high loss. Records of the National Fire Protective Association substantiate this fact. Sprinkler systems will not materially lessen insurance rates for very large areas."

The assertion that "sprinkler systems are not designed for large areas" is based on assumption and not facts. If this protection is not practicable in large areas, what about cotton mills, pier sheds, railway car shops, automobile factories, garages, and other buildings where great areas abound, and in which automatic sprinklers have successfully controlled fires? As a matter of fact automatic sprinklers have made possible maximum quantity production in industrial buildings of great areas. Concerning this a noted mill engineer said:

"The efficiency of automatic sprinkler protection is the chief cause in permitting the construction of very long and wide buildings, which bring about great concentration of values, which could not be risked at all if only the older method of protection were available. The large areas, which are permissible because of this means of protection, greatly aid manufacturing on a large scale at low cost. Thus fire protection brings a direct and substantial return to the manufacturer."

As for "certain instances" that automatic sprinkler systems "actually failed to work, at a point of immediate need," what has been the exact nature of such instances?

Has it been because of "large areas"? We think not. According to the "Statistics of Fires in Properties Having Automatic Sprinkler Protection," as published by the National Fire Protection Association, 1461 fires (4.2 per cent) of a total of 34,766 fires in 160 classes of property during the 29-year period 1897-1926 were not successfully controlled by automatic sprinklers. Most of these instances were due to faults of maintenance of sprinkler systems and only 86 due to "hazard of occupancy too severe" and in none of these instances was "large area" a condition involved.

It would certainly be very difficult to substantiate the assertion that "when more than 10 heads have been called into play, it has been a serious fire, in practically every instance with a high loss." Of a total of 316 fires in sprinklered garages, 220 were extinguished, 90 checked and only 6 were not successfully controlled by automatic sprinklers, 4 because water was shut off and 2 because of obstruction to distribution of water.

As for the "probability" of a serious loss where more than 10 heads have opened, an interesting example of the fallacy of this contention is in the case of a Brooklyn garage where the fire opened 288 sprinklers and the loss was nominal. And there is the case of a car shops fire in Canada in a building with an area of 64,000 sq. ft. and a roof 40 ft. high, where 21 of a total of 868 sprinklers opened and controlled a fire in a box car and so successfully that there was a damage of only $50 to the building and none to the contents. And previous to that fire there were 24 controlled by automatic sprinklers, and only 4 of them warranted claims for moderate losses.

The aforesaid statement is an erroneous assumption and not a fact and the records of the National Fire Protection Association certainly will subscribe little, if anything, to support the assumption.

Furthermore, if "sprinkler systems will not materially lessen insurance rates for very large areas" how is it that the principal industrial properties of this country enjoy the lowest insurance cost in the world because of automatic sprinkler protection, and that the rate of fire loss per $100 of insured values in these properties is less than five cents?

We respectfully commend the facts to the attention of the Special Committee on Way and Structures of the American Electric Railway Association. Also, especially, the fact that automatic sprinklers have been more successful in controlling fires in garages than in general among all classes—98.1 per cent in garages, 95.8 per cent in general.

And another fact: Buses are not as susceptible to damage as are some other kinds of contents and may well withstand, without appreciable damage, the beneficent rain from automatic sprinklers.

I. G. Hoagland,
Secretary, National Automatic Sprinkler Association.

Reply to Mr. Hoagland's Letter

To the Editor:

It seems to be that some misunderstanding has occurred in connection with the subject of automatic sprinkler protection for large areas. At the meeting (of the A. E. R. A. committee) considerable discussion centered around the erection of two large garages for bus companies, one in Chicago and another in Detroit. Areas approaching 100,000 sq. ft. were being considered and if I recall correctly the suggestion was put forward that automatic sprinklers should take care of any hazards within that area.

It was to such an assumption that exception was taken. Certainly representatives of the fire insurance industry do not discourage the use of automatic sprinklers and many large areas are protected by automatic sprinkler installations. Enormous area bus garages that had been equipped with automatic sprinklers were not at the time of this meeting known to any of the members present. The necessity of limiting areas even when automatic sprinkler systems were installed was also prominently stressed at this meeting, but possibly the record shown in the minutes taken by itself would not convey this impression. There is no wish to criticize the record of the minutes, but Mr. Hoagland has written without knowing what went before. I believe from the standpoint that he takes that none of us have any argument but quite agree with his attitude.

W. W. Wise,
Engineer, Fire Underwriter's Electrical Bureau.

Motor Transport News

THE READING, incorporation of a highway subsidiary of which was refused last year by Governor Gifford Pinchot of Pennsylvania, is advertising its intention of renewing its application. Formal application may be filed on March 11.

THE AIR MIST CAR WASHING SYSTEM, described in the Motor Transport Section of January 22, page 340, is a product of the Curtis Pneumatic Machinery Company, St. Louis, Mo. The name of the manufacturer was inadvertently omitted in the article.

A BILL to provide for the regulation of motor vehicle transportation, proposed by the American Automobile Association, has been introduced in the Senate by Senator Watson as S. 5730. A similar bill was introduced in the House some time ago by Representative Denison.

FROM 15 to 20 new buses will be purchased by the Northland Transportation Company in the near future to increase the frequency of its schedules over the 20 routes that it operates, according to C. E. Wickman, general manager. The purchases will involve an expenditure of about $150,000.

THE WESTERN SLOPE MOTOR WAY, INC., the bus-operating subsidiary of the Denver & Rio Grande Western in western Colorado, has purchased two 12-passenger buses to be used on a new bus line between Grand Junction, Colo., and Durango. It is planned to establish through bus service from Grand Junction to Mesa Verde National Park.

AN APPLICATION for a certificate of permission to operate regular daily motor truck freight service between New Orleans, La., and Baton Rouge has been filed with the Louisiana Public Service Commission by the Merchants' Dispatch Motor Freight Service of New Orleans. The company proposes to charge the same rates as those in effect on the railways, giving the extra service of store-door collection and delivery.

THE BUSES used by the Union Pacific in its Death Valley bus operations, which were described in the *Motor Transport Section* of January 22, are those which are used in the summer by its subsidiary, the Utah Parks Company, in southern Utah, and which have been idle during the winter months. At the present time two or three buses are being used and others will be supplied for the Death Valley service as required. The buses used were designed by the Union Pacific and are mounted on G. M. C. and White chassis. They accommodate 11 passengers.

THE CHICAGO & ALTON, which as yet has been unable to secure from the Illinois Commerce Commission a certificate of permission to operate buses on its proposed highway line between Joliet, Ill., and Springfield, has taken over two independent operators in this vicinity. It is now operating the buses on these lines, one line being between Joliet and Wilmington and the other between Pontiac and Bloomington. The equipment on these lines consists of two Yellow buses and several Reo buses, these having been acquired with the purchase of the bus lines.

BILLS PROVIDING for the uniform regulation of motor buses and for the establishment of a motor vehicle commission have been introduced in both houses of the state legislature of Tennessee. The motor vehicle commission is to be composed of three state officers: The highway commissioner, the attorney general and the commissioner of finance and taxation. Companies operating buses are to be required to furnish bonds in amounts fixed by the commission and they are to pay an annual license fee of $6 for each passenger seat and $25 for each ton capacity in the case of buses used for transporting freight.

W. J. & S. Authorized to Discontinue Trains, Substitute Trucks

The West Jersey & Seashore, an electrified subsidiary of the Pennsylvania, has received authority from the Board of Public Utility Commissioners of New Jersey to discontinue two passenger trains operating on its Elmer and Quinton branches (total length 14.9 miles) and to put on highway motor truck service to handle milk and express business.

The company showed that in the period May 10-July 9, 1926, each train had an average of five passengers from whom the revenue was $3.35. Revenue from milk and express was $3.66, making a total daily average revenue of $7.01. The cost of operating the trains was placed at $55.62 daily, leaving an out-of-pocket loss of $48.61. Truck service would cost $11 daily and a daily saving of $41.27 would result.

Middletown & Unionville Operates Buses

The Public Service Commission of New York has granted a certificate of public convenience and necessity to the Middletown & Sussex Transit Corporation for the operation of a motor bus line from Franklin square, Middletown, N. Y., through the towns of Wallkill, Wawayanda and Minisink and the village of Unionville to the New Jersey state line, to continue on to Sussex, New Jersey. This company is a subsidiary of the Middletown & Unionville Railroad which proposes to operate this route in conjunction with the railroad. The bus route, however, will serve a territory some distance from the railroad, with a population of about 4,000. The railroad stations are about five miles apart, while the bus route will carry passenger from intermediate points.

The company proposes to operate five round trips daily, except Saturday when a special trip will be made. The fare from Middletown to Unionville (15 miles) will be 50 cents and to Sussex (20 miles) 75 cents. Commutation tickets will be sold.

The company has two Yellow coaches for this service. It has reduced its rail schedules by one round-trip daily and further reductions are contemplated.

D. & R. G. W. Adds Bus Lines

The Denver & Rio Grande Western has applied to the Colorado Public Utilities Commission for permission to operate a temporary passenger, freight and express bus and truck line between Salida, Colo., and Alamoso, a distance of approximately 100 miles. Application has also been made for the installation of a bus line between Alamosa and Walsenburg, a distance of approximately 60 miles. The bus service on the Alamoso, Walsenburg line is to replace passenger train service on this branch.

The railway is asking for 90-day permits which, under the rules of the commission, provide that new lines may be operated for this period with a view to determining whether or not such operations are justified from a revenue standpoint.

In the application it was stated that the average number of passengers carried daily between Salida and Alamosa in 1925 was 28, and an operating loss of $44,984 was incurred. In 1926, the average number of passengers carried on the branch daily was 23 and the operating loss increased to $47,377.

Rail and Motor Service in New Zealand Co-ordinated

The New Zealand Government Railways, unprotected by recent legislation against competition of suburban bus lines, have met the problem by purchasing existing competitive bus services or by withdrawing the railways service, according to advices from Consul General W. L. Lowrie, Wellington, made public by the Department of Commerce.

Because of the recognition that many of the competitive services have proved that the passenger traffic on many other branch lines of the railways could be better served by railway bus service, or that interurban services now maintained by train would be more economical by bus, a start has been made by buying out one important interurban bus service and discontinuing correlative train services, and the initiation of a branch line daily bus service in the place of a tri-weekly passenger train. Experience has shown that rail freight operation only on the New Zealand branch lines would be more economical, and passengers better served by a parallel bus service able to stop "at the doorstep" in the more sparsely settled country.

New Zealand authorities are rapidly realizing that a railway is necessarily limited to low-grade routes. These have already been developed in the Dominion, leaving many unprofitable heavy-grade routes undeveloped, which are capable of supporting a large population. It is considered that the road-motor has opened up innumerable opportunities for a great co-ordinated public service

payable in the mass where individual private enterprises would perish. Consideration is being given to a wide-spread subsidiary or subsidized co-ordinating motor transport service to develop the back country and afford access to main-line centers.

The extraordinary development of motor traffic has changed the whole position so that it is necessary to investigate the question as to whether certain lines of railway should not be closed down altogether, for the reason that they cannot, under improved road conditions, and resulting competition by motor traffic, pay their way. These railways in their day developed the financial resources of the district they served. That development has placed the district in a position to improve its roads to a degree enabling motor vehicles to convey farm requirements from town stores to farms, and farm products to two stores or main line stations or ports.

Motor Transport Officers

W. J. Schieber, mechanical inspector of the New England Transportation Company, with headquarters at Brockton, Mass., has been transferred to Providence, R. I.

G. E. Sick has been placed in charge of motorization studies, installations and supervision on the Eastern region of the Pennsylvania, with headquarters at Philadelphia, Pa., instead of on the Central region as reported in the Motor Transport Section of January 22. **G. F. Dell** has been placed in charge of such service on the Central region, with headquarters at Pittsburgh, Pa., instead of on the Eastern region.

Among the Manufacturers

Thomas M. Simpson, secretary of the **Continental Motor Corporation,** Detroit, Mich., has been transferred to the company's offices in Muskegon, Mich.

H. Randall Wickes, vice-president of the **Ruggles Motor Truck Company,** Saginaw, Mich., has been appointed vice-president and general manager, succeeding as general manager, **R. J. Goldie,** who has resigned.

Headquarters of the western region of the sales and service organization of the **White Company** have been established at Kansas City, Mo., in charge of **Newell Lyon,** vice-president, and **E. W. Stock,** regional service manager.

W. E. McQueeney, branch manager of the **Mack Motor Truck Company** at Bridgeport, Conn., has been transferred to the branch at Providence, R. I. **F. W. Beardslee** succeeds Mr. McQueeney at Bridgeport. **M. W. Hall,** manager of the Erie, N. Y., branch, has been appointed manager of the branch at Cincinnati, Ohio. **H. J. Moran** has been appointed branch manager at Charlotte, N. C., and **R. H. Hohman** has been appointed branch manager at Oklahoma City, Okla.

The Automatic Transportation Company, Inc., Buffalo, N. Y., has been acquired by the **Walker Vehicle Company,** Chicago. **G. L. Freeman,** president of the Walker Vehicle Company, has been elected president of the Automatic Transportation Company, Inc., and **E. L. Kleindinst** will continue as vice-president and general manager. **S. G. Lamkey,** formerly assistant treasurer of the Walker Vehicle Company, has been elected secretary and treasurer of the Automatic Transportation Company, Inc.

O. H. Basquin, professor at Northwestern University, has resigned to take charge of the engineering department of the **Haskelite Manufacturing Corporation,** with headquarters at Chicago. He has been acting as consulting engineer for the Haskelite Company since its organization. At Northwestern University, Professor Basquin was particularly concerned in the field of strength of materials. He is a member of the advisory committee of the National Research Council on the so-called fatigue phenomena of metals.

Through a merger of the **Westinghouse Air Spring Company,** New Haven, Conn., and the Cleveland Pneumatic Tool Company, Cleveland, Ohio, the facilities of the two companies will be combined at Cleveland and the **Cleveland Pneumatic Tool Company** will manufacture and sell both the Gruss and Westinghouse air springs. The service stations of the Cleveland Pneumatic Tool Company will in the future serve users of both Gruss and Westinghouse equipment and the field service department operating directly from Cleveland will be increased in size.

The following officers have been elected by the **Relay Motor Corporation,** which was recently incorporated to take over the assets of the **Commerce Motor Truck Company,** Ypsilanti, Mich., and **Service Motors, Inc.,** Wabash, Ind. Chairman of the board of directors, **W. R. Bassick;** president, **G. I. Gillam,** formerly president, Service Motors; vice-president in charge of sales, **M. A. Holmes,** formerly director of sales of the Commerce Motor Truck Company; secretary and treasurer, **A. K. Taber,** formerly treasurer, Service Motors. The new company, the headquarters of which are at Wabash, will continue the manufacture of both Service and Commerce trucks as well as the new Relay trucks.

John A. Ritchie, president of the **Yellow Truck & Coach Manufacturing Company, Chicago,** has been appointed vice-chairman of the board of directors and **Paul W. Seiler,** president and general manager of the Ternstedt Manufacturing Company, has been appointed president and general manager to succeed him. The change is made, according to the announcement, to enable Mr. Ritchie to devote more time to the sales end of the coach business. Mr. Seiler, who was born at Hudson, Ind., on August 15, 1888, has devoted his entire business life to the automotive field. He was first employed by the W. H. Kiblinger Company, Auburn, Ind., in both shop and service work. He later joined the Streator Motor Company, at Streator, Ill., where he was employed in the sales and service departments. Mr. Seiler was placed in charge of the field service department of the Hudson Motor Car Company in 1912, and later became identified with the Ford Motor Company as special representative and auditor. In 1915 he was promoted to assistant manager at Nashville, Tenn., and a year later was promoted to manager of the Ford interests in the southwestern states, with headquarters at San Antonio, Tex. Mr. Seiler was made general manager of the Ternstedt Manufacturing Company, manufacturers of automobile body hardware, in December, 1917. Three years later he was promoted to president of the company and remained in that position until his appointment as president and general manager of the Yellow Truck & Coach Manufacturing Company.

P. A. Seiler

Trade Publications

HASKELITE HOUSE ORGAN.—The Haskelite Manufacturing Corporation, Chicago, is now publishing a house organ, known as "The Lightweight Champions' Record." This publication describes various uses of Haskelite, Plywood and Plymetl in motor buses, trucks and cars.

CURTIS AUTOMATIC AIR-MIST SYSTEM.—Bulletin C-6-C of the Curtis Pneumatic Machinery Company, St. Louis, Mo., describes the new automatic "air-mist" bus washing system which also automatically maintains air for tire inflation. The bulletin also describes the Curtis air lift for car wash racks.